PHOTOFACT* FOLDER SET

*TRADE MARK

NO. 62

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The PHOTOFACT Servicer

May 15, 1949 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ Vol. 7, Nos. 61 & 62

IMPORTANT - WATCH ION TRAP ALIGNMENT ON PICTURES TUBES

Picture Tube Damage Resulting From Incorrect Ion Trap Magnet Alignment: Of major importance in the installation of a television set is the proper adjustment of the ion trap magnet on the neck of the cathode ray picture tube. Improper positioning of the magnet may result in circular areas of discoloration developing on the face of the bulb, thus injuring the picture screen, even though the ions developed in the cathode section of the tube have been properly "trapped". When the magnet is not in the correct position, the electron beam, instead of going through the aperture in the anode top disk, bombards the edge of the hole. The heat thus produced vaporizes the metal of the disk (see Fig. #1) releasing gases which have a harmful effect on the operation of the tube. Some of this vaporized material may be deposited on the screen of the tube causing darkened areas.

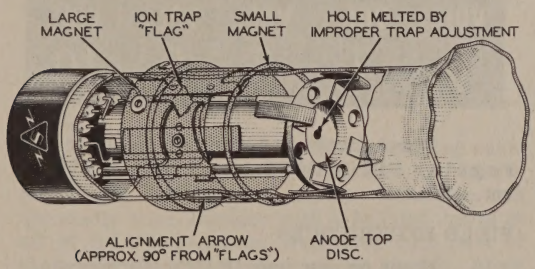


Fig. 1

(For theory of Ion Trap operation and additional illustrations see Photofact Television Course Pages 16, 17, 61, and 114).

CR Tube Courtesy Sylvania; Ion Trap Courtesy Clarostat

To insure long life and satisfactory operation of the picture tube, the ion trap magnet should by adjusted immediately when the tube is installed in the set and, as a precaution, should be checked when the set is moved to a new location. If a permanent magnet type is used, the magnet should be placed on the neck of the tube in the direction indicated by the marking on the magnet (usually an arrow which points toward the picture screen), so that the stronger magnet of the double magnet type is at the base end of the tube. This stronger magnet in the case of the double magnet type (or the only magnet in the case of the single magnet type) should be positioned over the internal pole pieces (or "FLAGS") which are mounted on the gun structure. With the tube operating and with the brightness control adjusted for low intensity, the magnet should be moved a short distance forward and backward, at the same time rotating it to obtain the brightest raster. If, in obtaining the brightest raster, the ion trap magnet has to be moved more than 1/4 inch from the internal pole pieces or if it is pushed against the focus coil, the magnet is probably weak and a new magnet should be tried. As a final check, the ion trap magnet should again be adjusted for maximum raster brilliance, this time with the brightness

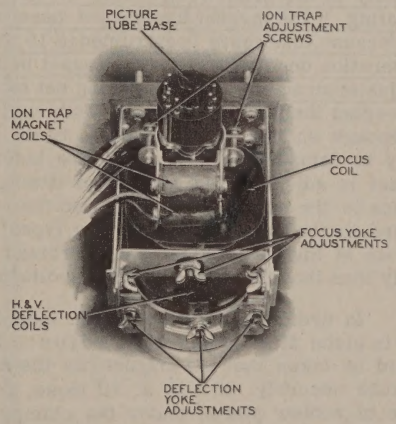


Fig. 2

control set to obtain a raster of slightly above average brilliance and with the focus adjusted for a clear line structure to simulate actual operating conditions with a picture.

Never move the ion trap magnet to remove a shadow from the raster if by so doing the intensity of the raster is decreased. In such a case the shadow should have been eliminated by moving the focus or deflecting coils. The ion trap magnet should always be in the position to give maximum

raster brilliance.

If the electromagnetic type ion trap magnet (See Fig. #2) is used, it should be placed on the neck of the tube with the larger magnet over the internal pole pieces and nearest the base, and adjustment for brightest raster is obtained by rotating the magnet and adjusting the current through it. The effect of current variation is the same as longitudinal movement of the permanent magnet type. The longitudinal position of the permanent magnet type or the current applied to the electromagnetic type is dependent upon the voltage applied to the tube and may vary for the same type of tube from one receiver to another.

(CAUTION: If a raster is not obtained in a few seconds using the above procedure, turn the set off and check to make sure that the ion trap magnet is positioned according to the manufacturer's instructions or markings. If the desired results cannot be obtained, it is suggested that a new magnet be tried.)

If the picture tube has just been installed or the set has been moved, it is imperative that the brightness control be kept low until after the initial adjustment of the magnet and also that adjustment of the magnet be made immediately when the set is turned on. It is important that the intensity of the beam be low when the set starts operating, if the magnet has not yet been adjusted, because tubes have been ruined in 15 seconds of operation due to the ion trap magnet being out of adjustment and the intensity being set too high. By keeping the intensity low, the beam current is low enough so that the electron beam is not likely to damage the anode top disk before the magnet is adjusted. The amount of damage that is done to the tube is a function also the voltage applied to the tube; therefore, tube types which operate at high voltages may be ruined more easily than those operated at lower voltages.

In order to assure that the magnet will stay in place after it has been adjusted care should be taken that the magnet fits the neck of the tube securely. If it is at all loose, a small piece of rubber placed under the clamps or a piece of friction tape wound around the clamps should prevent the magnet from slipping.

The procedure for aligning the ion trap magnet should not be omitted just because the set seems to be operating satisfactorily -- it is not always safe to assume that the magnet is still in adjustment if the set has been transported. Even with the magnet poorly aligned a good picture can be obtained but within a short time circular darkened areas will appear on the screen.

(Courtesy Sylvania Electric Products Co., Inc.)

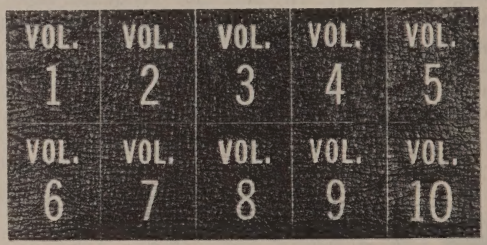
VOLUME NUMBER LABELS NOW AVAILABLE FOR PHOTOFACT BINDERS FREE OF CHARGE TO REGULAR PHOTOFACT SUBSCRIBERS. (See Attached Certificate.)

After considerable study and experimentation we have devised a satisfactory means for numbering PHOTOFACT Volumes.

The numbers are impressed in genuine gold leaf on 3in. x 6 1/2in. strips of black imitation leather. Each strip provides ten numbers for PHOTOFACT Volumes #1 to #10. When the strip is cut into the ten individual volume number labels each label measures 1 1/4in. wide x 1 1/2in. high.

By applying a thin coating of DUPONT DUCO GLUE to the back of an individual volume number label and then pressing it on the backbone of the PHOTOFACT binder the volume number will be permanently attached to the binder.

Be sure to mark the place on each binder where you want to place the number. Once it has been attached you can't get it off without tearing the binder material.



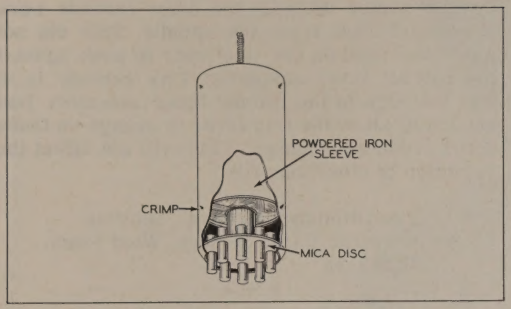
These labels are available to other than regular PHOTOFACT subscribers at 25¢ per set.

FIELD EXPERIENCES

Notes on new type IF Transformers.

In servicing two Motorola car radios recently I found the source of trouble to be in the new type permeability-tuned IF transformers and this defect can occur in any receiver using this type of IF transformer.

This type of IF transformer has a moulded tubular shield of powdered iron which surrounds the windings inside of the can. The can is crimped above and below this moulded shield to hold it in place. Vibration and handling may cause it to slip down and make intermittent contact with the lugs at the base of the transformer. This in turn can cause a number of symptoms such as erratic intermittent operation, shorting of B-plus, etc. One receiver played



perfectly as long as it was upside down but when righted the B-plus shorted out. The other set would operate but would cut in and out when tapped or jarred.

I remedied the fault by setting the shield in its proper place and then re-crimping the can with a small screw-driver and hammer (Caution: Do not tap too hard). These crimps are made immediately below the shield to hold it in place. (See illustration).

H. H. Lightfoot
Lightfoot Service
Onslow, Iowa

* * *

ARVIN 182TFM
Photofact Set #32, Folder #3

Complaint: FM reception very weak and distorted.
Remedy: There are two braids connecting each section of the gang tuning condenser to chassis for ground. Any one of these may be broken and not easily seen. Replace with a heavier braid at all of the six positions. Replacing only part of them will not always clear up the trouble. After realigning the set FM reception will be restored to normal.

Submitted by: Delwin C. Schwink
Schwinke Radio Service, West Point, Nebraska

* * *

PHILCO CHANGER D-10, D-10A
Photofact Set #14, Folder #21

Complaint: Tone arm would not reject at end of some records.
Remedy: I started with a dozen records and the changer worked fine until the last record. Lower-

25¢

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25¢

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25¢

ing the record in the stack did not help. Upon close examination I found that the eccentric groove of this one record was 1 3/4in. from the spindle center whereas the other records were around 1 9/16in. from the spindle. This did not allow the pawl on the trip lever to push against the ratchet lever assembly. The remedy is to file the edge of the ratchet lever assembly just enough to allow the trip lever to engage on these short eccentric grooves. This will not affect the rejection of other records.

Submitted by: Delwin C. Schwink
Schwinke Radio Service, West Point, Nebraska

* * *

GE MODELS 502 & 417

When aligning GE Models 502 (Photofact Set #35, Folder #9), GE Model 417 (Photofact Set #16, Folder #15), or Musaphonic chassis it is very important to "rock in" the Mixer and Oscillator circuits to get maximum sensitivity. There may be several settings that will receive the signal but only one that's hot. Proper "rocking" sometimes cures regeneration.

* * *

PHILCO-STUDEBAKER S4627
Photofact Set #19, Folder #32

Complaint: Intermittent, noisy cut-out with final complete failure.
Remedy: Test showed B-volts okeh, audio okeh, IF insensitive, oscillator dead although proper voltage were present at terminals. I found the 7B8 control grid receiving a varying positive voltage. I replaced the 250mmf coupling condenser in the 7A7 plate circuit which I found had a high resistance short.

Submitted by: Paul H. Chitwood
P. O. Box 940, Mount Shasta, Cal.

* * *

STROMBERG-CARLSON-1210 Series 12
Photofact Set #37, Folder #23

Complaint: Frequency shift on the FM high frequency band.
Remedy: This shift was not a drift of the oscillator but sudden changes of from one to two mc. The trouble was found to be in the plunger-type oscillator capacitor across the slug-tuned oscillator coil. I replaced it with a 4-25 mmfd zero temperature coefficient ceramic trimmer in parallel with a 20 mmfd - .750 negative coefficient ceramic tubular which cured the trouble and eliminated the frequency drift during warm-up.

Submitted by: Robert T. Nagler
713 Broadway, Prairie Du Sac, Wis.

ADMIRAL, MODEL 6V12

TRADE NAME Admiral, Models 6V11, 6V12 (Ch. 6V1)
MANUFACTURER Admiral Corp., 3800 W. Cortland St., Chicago 47, Illinois
TYPE SET AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop Antenna
TUBES (SIX) 12SA7 Converter, 12SK7 IF Amp., 12SQ7 DET-AVC, 12SQ7 AF Amp., 35L6GT Power Output 35Z5GT Rectifier

POWER SUPPLY 110-120 Volts AC RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST 540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer, turn tuning gang fully closed and set pointer at last reference mark at low frequency end of dial. (Calibration marks on back of dial backplate are as follows left to right-extreme left hand limit, 600KC, 1400KC, 1630KC.)

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	250MMF	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap fully open.	Across voice coil	A1, A2 A3, A4	Adjust for maximum output.
2.	250MMF	"	1620KC	"	"	A5	" " " "
3.		Loop	1400KC	Tune for max. signal.	"	A6	Place chassis and loop in cabinet. Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust of maximum output.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

ADMIRAL MODEL 6V12

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12SA7	12SA7	8AD	
V2	IF Amp.	12SK7	12SK7	8N	
V3	DET-AVC	12SQ7	12SQ7	8Q	
V4	AF Amp.	12SQ7	12SQ7	8Q	
V5	Power Output	35L6GT	35L6GT	7AC	
V6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	150	67A14-1	PRSA-403020	EZ443150		DSB-4030 20-150	TA-303	Filter Red
B	30	150		PRS150-20			M-25-25	TA-25	Filter Yellow
C	20	150							Filter Blue
D	20	25							Output Cath. Byp. Green
C2	.1	200	64B1-30	P288-1	GT2P1		ST-2-1	TM-1	AVC Filter
C3	50		65B6-4	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	Osc. Grid Cap.
C4	.02	400	64B1-24	P488-02	GT4S2		ST-4-02	TM-12	Tuning Cap Iso. Note
C5A	100		*	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Diode Filter
B	100			1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	" "
C6	500		65B6-6	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	Tone Comp.
C7	.01	400	64B1-25	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	" "
C8	.1	200	64B1-30	P288-1	GT2P1		ST-2-1	TM-1	Phono Isolation
C9	.01	400	64B1-25	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Audio Coupling
C10	.002	600	64B1-14	P688-002	GT6D2	GP2M-002	ST-6-002	TM-22	Tone Comp.
C11	.1	200	64B1-30	P288-1	GT2P1		ST-2-1	TM-1	AF Plate Decoupling
C12	.01	400	64B1-25	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Audio Coupling
C13	.03	400	64B1-23	P488-03	GT4S3		ST-6-03	TM-13	Output Plate Bypass
C14	.18	200	64A2-2	P488-22	GT4P2		ST-4-2	72P3	Line Isolation
C15	.05	400	64B1-22	P488-05	GT4S5		ST-4-05	TM-15	Line Filter

Note-Used only in UL models
* Items C5A, C5B, and R16 are combined into one unit obtainable under MFGRS Part No. 63A3-1.

CONTROLS

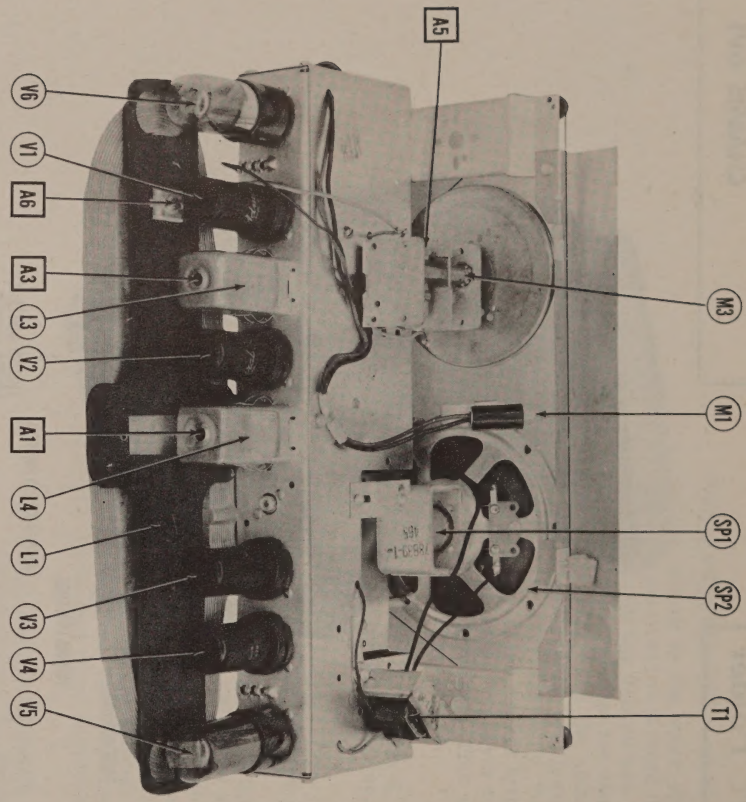
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	75B2-6	D19-137X	AT-112	Volume control tapped @ 500K
B	Shaft		Not Req.	E	KSS-3	Attach to R1A Per Instructions
R2A	2 Meg.	½	75B1-12	D13-139	AM-83-S	Tone Control
B	Shaft		Not Req.	E	KSS-3	Attach to R2A Per Instructions
C	Switch		Not Req.	41	SW-A	Attach to R2A Per Instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	IDENTIFICATION CODES	
R3	22KΩ	½	60B8-223	BTS-22K	Red-Red-Or.	Osc. Grid
R4	10 Meg.	½	60B8-106	BTS-10 Meg.	Br.-Blk.-Blue	AVC Network
R5	1 Meg.	½	60B8-105	BTS-1 Meg.	Br.-Blk.-Grn.	AVC Network
R6	4.7 Meg.	½	60B8-475	BTS-4.7 Meg.	Yl.-Vi.-Grn.	AF Grid
R7	470KΩ	½	60B8-474	BTS-470K	Yl.-Vi.-Yl.	AF Plate
R8	47KΩ	½	60B8-473	BTS-47K	Yl.-Vi.-Or.	AF Plate Decoupling
R9	470KΩ	½	60B8-474	BTS-470K	Yl.-Vi.-Yl.	Output Grid
R10	150Ω	1	60B14-151	BW-1-150	Br.-Grn.-Br.	Output Cathode
R11	27KΩ	½	60B8-273	BTS-27K	Red-Vi.-Or.	Tone Compensation
R12	150KΩ	½	60B8-154	BTS-150K	Br.-Grn.-Yl.	Line Isolation
R13	33Ω	1	60B28-3		Or.-Or.-Blk.	Surge Limiter
R14	150Ω	1	60B14-151	BW-1-150	Br.-Grn.-Br.	Filter See Note
R15	1000Ω	1	60B28-2	BTA-1000	Br.-Blk.-Red	Filter
R16	47KΩ	½	*	BTS-47K		Diode Filter

Note. Some models use a 220Ω resistor in this application. IRC replacement BW-2-220
* Items C5A, C5B, and R16 are combined into one unit obtainable under MFGRS Part No. 63A3-1.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ADMIRAL	STANCOR	CHICAGO	MERIT	
	PRI.	SEC.	PRI.	SEC.	PART No.	PART No.	PART No.	PART No.	
T1	2200Ω	3.1Ω	370Ω	.4Ω	79A11-2	A-3876	RO-2	A-2928	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ADMIRAL PART No.	JENSEN PART No.	QUAM PART No.	
SP1	FIELD PM	V. C. IMP. 3.1Ω	78B39-1	ST-105 MOD. P5-X	5A15	
SP2	CONE DIA. 4 3/4"	V. C. DIA. 9/16"				

R F COILS

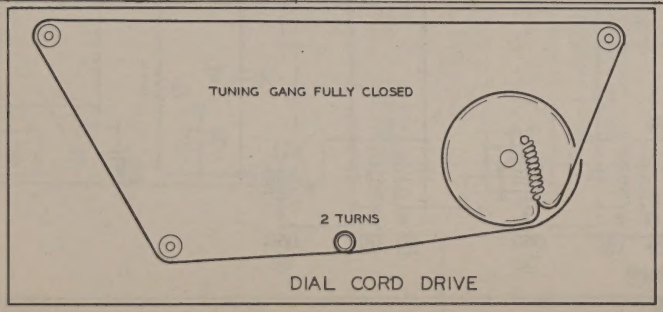
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ADMIRAL PART No.	MEISSNER PART No.	
L1	Loop Ant.	1.5Ω		69B13		
L2	Osc. Coil	6Ω		69A52	14-1060	
L3	Input IF	26Ω	26Ω	72B50		
L4	Output IF	26Ω	26Ω	72B51		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					ADMIRAL PART No.		
M1	Bayonet	6-8V	0.15A	Brown	81A1-8		Type #47

MISCELLANEOUS

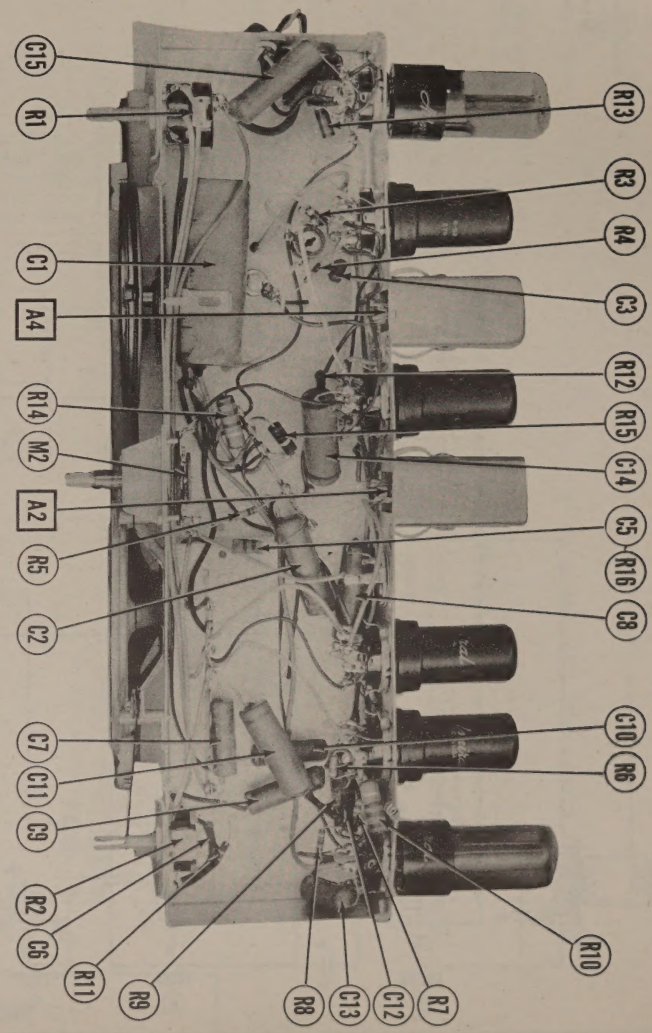
ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M2	Switch	77A16-4	Radio-Phono
M3	2 Gang Var. Cap.	69B20-1	(17-447MMF, 19-130 MMF)
	Dial Scale	21B35-2	Glass
	Dial Pointer	25A21	
	Cartridge	409A11	Phono



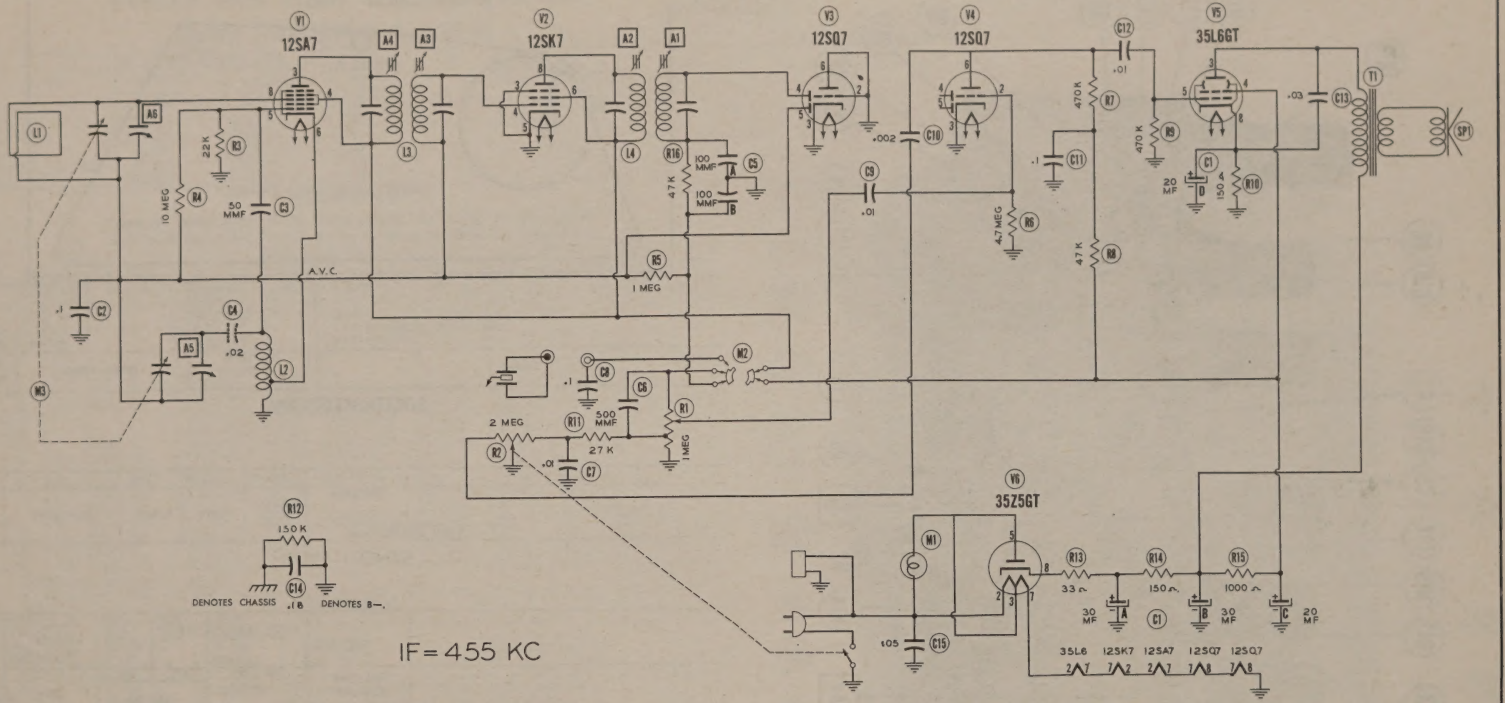
DATE 5/49 4910-1 SEC #62 FOLDER #1

ADMIRAL MODEL 6V12

CHASSIS—BOTTOM VIEW



ADMIRAL MODEL 6V12



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	0V	39VAC	85VDC	85VDC	§-10VDC	0V	25VAC	-.5VDC
V 2	12SK7	0V	39VAC	0V	-.5VDC	0V	85VDC	50VAC	85VDC
V 3	12SQ7	0V	0V	0V	-.5VDC	-.2VDC	0V	12VAC	0V
V 4	12SQ7	0V	-.8VDC	0V	-.3VDC	-.4VDC	40VDC	25VAC	12VAC
V 5	35L6GT	0V	112VAC	100VDC	85VDC	0V	75VDC	50VAC	5VDC
V 6	35Z5GT	0V	117VAC	112VAC	117VAC	112VAC	117VDC	86VAC	120VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	150KΩ	36Ω	*1200Ω	*1200Ω	22KΩ	.8Ω	24Ω	1.3 Meg.
V 2	12SK7	150KΩ	24Ω	0Ω	1.3 Meg.	0Ω	*1200Ω	24Ω	*1200Ω
V 3	12SQ7	150KΩ	0Ω	0Ω	1.3 Meg.	600KΩ	0Ω	12Ω	0Ω
V 4	12SQ7	150KΩ	4.7 Meg.	0Ω	Inf.	Inf.	*470KΩ	19Ω	12Ω
V 5	35L6GT	Inf.	24Ω	*400Ω	*1200Ω	470KΩ	200KΩ	36Ω	150Ω
V 6	35Z5GT	Inf.	3Ω	5.5Ω	3Ω	5.5Ω	170KΩ	22Ω	170KΩ

* Measured from pin 8 of V6.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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4910-1

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TRADE NAME Aircastle, Model SC-448
SUPPLIER Spiegel, Inc., 1061 W. 35th St., Chicago, Illinois
TYPE SET AC Operated FM Superterodyne Tuner
TUBES(FOUR) Types 6BE6 Converter, 6BA6 1st IF Amp., 6BA6 2nd IF Amp., 6AL5 Ratio Detector

POWER SUPPLY 105-125 Volts AC
TUNING RANGE-FREQ. MOD. 87.5-108.5MC RATING .21 Amp. @ 117 Volts AC

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 5%) resistors in series from pin 7 of V4 (6AL5) to chassis. The junction of these two resistors is alignment point B as designated on schematic diagram.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	5000MMF	High side to pin 1 (Grid) 6BA6 (V3). Low side to chassis.	10.7MC	Tuning cap. fully open	DC Probe to point (A) Common to chassis.	A1	Adjust for maximum deflection.
2.	5000MMF	"	"	"	DC Probe to point (B) Common to chassis.	A6	Adjust for zero reading. A positive and negative reading is obtained on either side of correct setting.
3.	5000MMF	High side to pin 1 (Grid) 6BA6 (V2). Low side to chassis.	"	"	DC Probe to point (A) Common to chassis.	A2, A3	Connect 1000Ω carbon resistor shunt across primary of L4 and adjust A2 for maximum deflection. Move shunt to the secondary and adjust A3 for maximum deflection.
4.	5000MMF	High side to pin 7 (Grid) 6BE6 (V1). Low side to chassis.	"	"	"	A4, A5	Alternately shunt the primary and secondary of L3 as in the preceding step and adjust A4 and A5 for maximum deflection.
5.	Two 120Ω carbon res.	Insert 120Ω resistor in each generator lead and connect across terminals 1 & 2 of Ant. terminal strip.	90MC	90MC	"	L2	Adjust spacing of the turns of L2 for maximum deflection.
6.	Two 120Ω carbon res.	"	106MC	106MC	"	A7, A8	Adjust for maximum deflection.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	5000MMF	High side to pin 1 (Grid) 6BA6 (V2)	10.7MC (450KC Sweep)	Tuning cap fully open	Vert. Amp. to point (A) Low side to chassis.	A1, A2, A3	Disconnect stabilizer cap. (C2). Adjust for maximum amplitude and symmetry as per Fig. 1.
2.	5000MMF	High side to pin 7 (Grid) 6BE6 (V1)	"	"	"	A4, A5	Adjust for maximum amplitude and symmetry as per Fig. 1.
3.	5000MMF	"	"	"	Vert. Amp. to point (C) Low side to chassis.	A6	Reconnect stabilizer cap. (C2). Adjust so cross-over point occurrs at center of pattern as per Fig. 2. Slightly retouch A1 for maximum amplitude and straightness of cross-over lines. Continue with step 5.

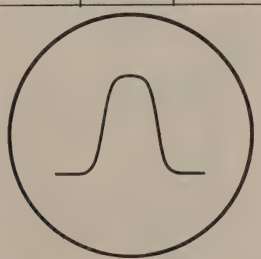


FIG. 1

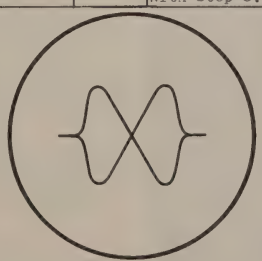


FIG. 2

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

AIRCASTLE MODEL SC-448

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	6BE6	6BE6	7CH	
V2	1st IF Amp.	6BA6	6BA6	6BK	
V3	2nd IF Amp.	6BA6	6BA6	6BK	
V4	Ratio Detector	6AL5	6AL5	6BT	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRCASTLE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	3003	PRSA150/50-30	EDL5315		DSB-5030-150	TA-530	Red Filter
B	30	150							Blue Filter
C2	2	50	3005	PRS150/4	BR415		M-4-150	TVA-12	Stabilizing Cap.
C3	27		ESC270	1468-000025	5W5Q3	GP1K-25	MO.5-43	MS-425	Osc. Grid Cap.
C4	270	500	ESM271	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	Osc. Anode Bypass
C5	27		ESC270	1469-000025	5R5Q25	NPOL-25	MOS.5-425	MS-425	Fixed Trimmer
C6	5000		Note 1	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	1st IF Cath. Bypass
C7	.005	200	BBP502	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	1st IF Decoupling
C8	5000		Note 2	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	2nd IF Cath. Bypass
C9	.005	200	BBP502	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	2nd IF Decoupling
C10	270	500	ESM271	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	Diode Load Cap.
C11	1000		ESC102	1468-001	1W5D1	GP2L-001	MW.5-21	1FM-21	De-emphasis
C12	1000		ESC102	1468-001	1W5D1	GP2L-001	MW.5-21	1FM-21	RF Bypass
C13	.05	400	DBP503	P488-05	GT4S5		ST-4-05	TM-15	Audio Coupling
C14	.01	400	DBP103	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	RF Bypass
C15	.01	400	DBP103	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Fil. Bypass
C16	.01	400	DBP103	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Line Filter

Note 1. Items C6 and R3 are combined into one unit obtainable under MFGRS Pt. # 3006.
Note 2. Items C8 and R5 " " " " " " " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	IDENTIFICATION CODES	
R1	22KΩ	½	XS223	BTS-22K	Red-Red-Or.	Osc. Grid
R2	470Ω	½	XB471	BTS-470	Yl.-Vi.-Br.	Converter Decoupling
R3	68Ω	½	Note 1			IF Cathode
R4	470Ω	½	XB471	BTS-470	Yl.-Vi.-Br.	IF Decoupling
R5	68Ω	½	Note 2			2nd IF Cathode
R6	470Ω	½	XB471	BTS-470	Yl.-Vi.-Br.	2nd IF Decoupling
R7	47KΩ	½	XS473	BTS-47K	Yl.-Vi.-Or.	De-emphasis
R8	47KΩ	½	XS473	BTS-47K	Yl.-Vi.-Or.	Rat. Det. Diode Load
R9	470Ω	½	XB471	BTS-470	Yl.-Vi.-Br.	Filter

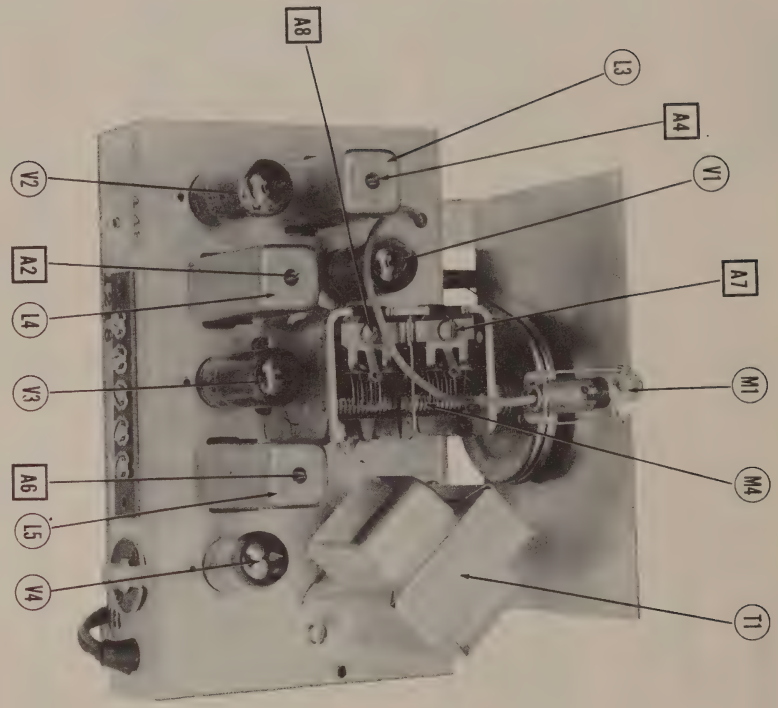
Note 1. Items C6 and R3 are combined into one unit obtainable under MFGRS Pt. # 3006.
Note 2. Items C8 anf R5 are combined into one unit obtainable under MFGRS Pt. # 3006.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: AIRCASTLE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
T1	117VAC @ .21A	120VAC .037ADC	6.8VAC @ 1.35A		4013	P-6289 *#†	PH-40#	P-3147*#

* Add series resistor to reduce plate voltage.
# Drill new mounting holes.
† Mount vertically with universal mounting brackets.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

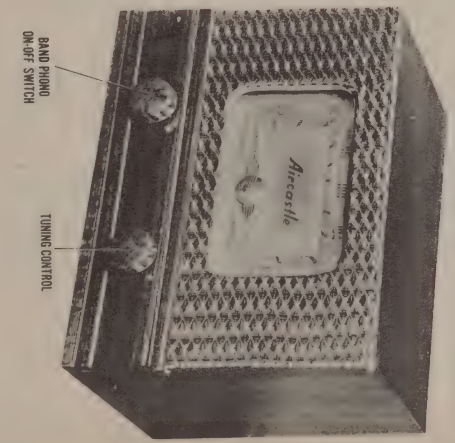
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA AIRCASTLE PART No.	REPLACEMENT DATA MEISSNER PART No.
L1	Ant. Coil	0Ω		4017	
L2	Osc. Coil	0Ω		4018	
L3	1st IF	.5Ω	.5Ω	4015	
L4	2nd IF	.6Ω	.6Ω	4014	
L5	Ratio Det.	.2Ω	.2Ω	4016	
L6	Fil. Choke	.5Ω		4005	

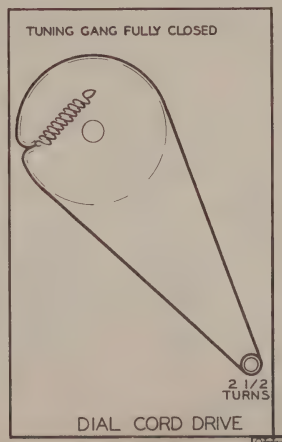
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA AIRCASTLE PART No.		NOTES
M1	Bayonet	6-8V	0.15A	Brown			Type #47

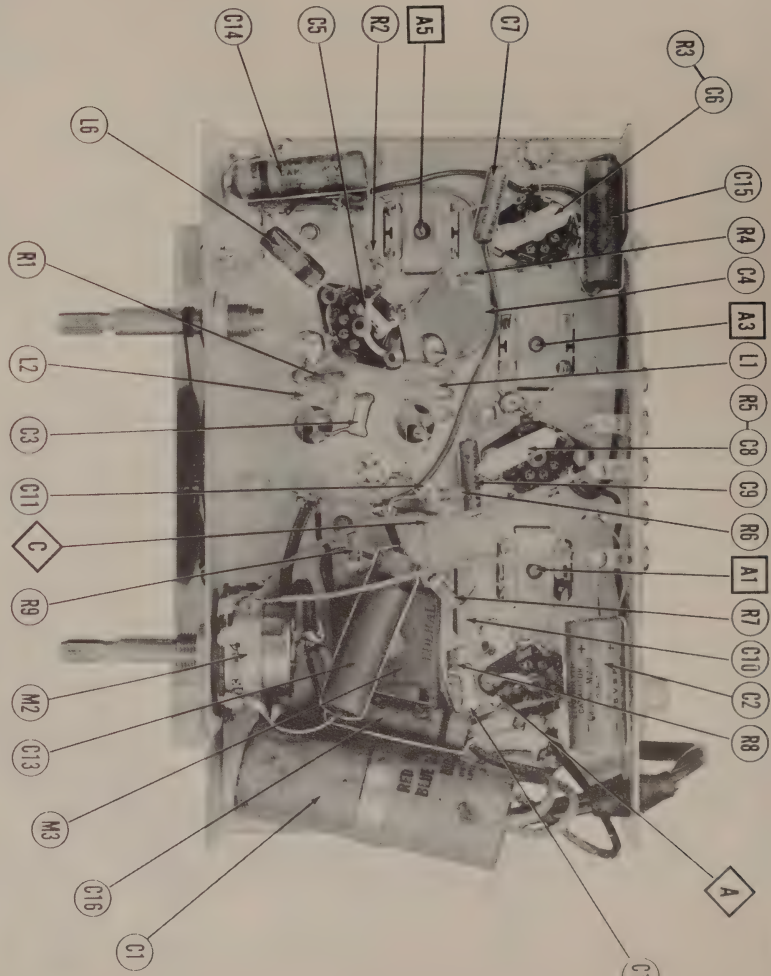
MISCELLANEOUS

ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
M2	Switch	1004	AC-Phono Switch
M3	Rectifier	3004	Selenium
M4	2 Gang Var. Cap.	2004	
	Dial Face	6037	
	Dial Window	6039	
	Dial Pointer	6040	
	Knob	6034	
	Cabinet	6041	

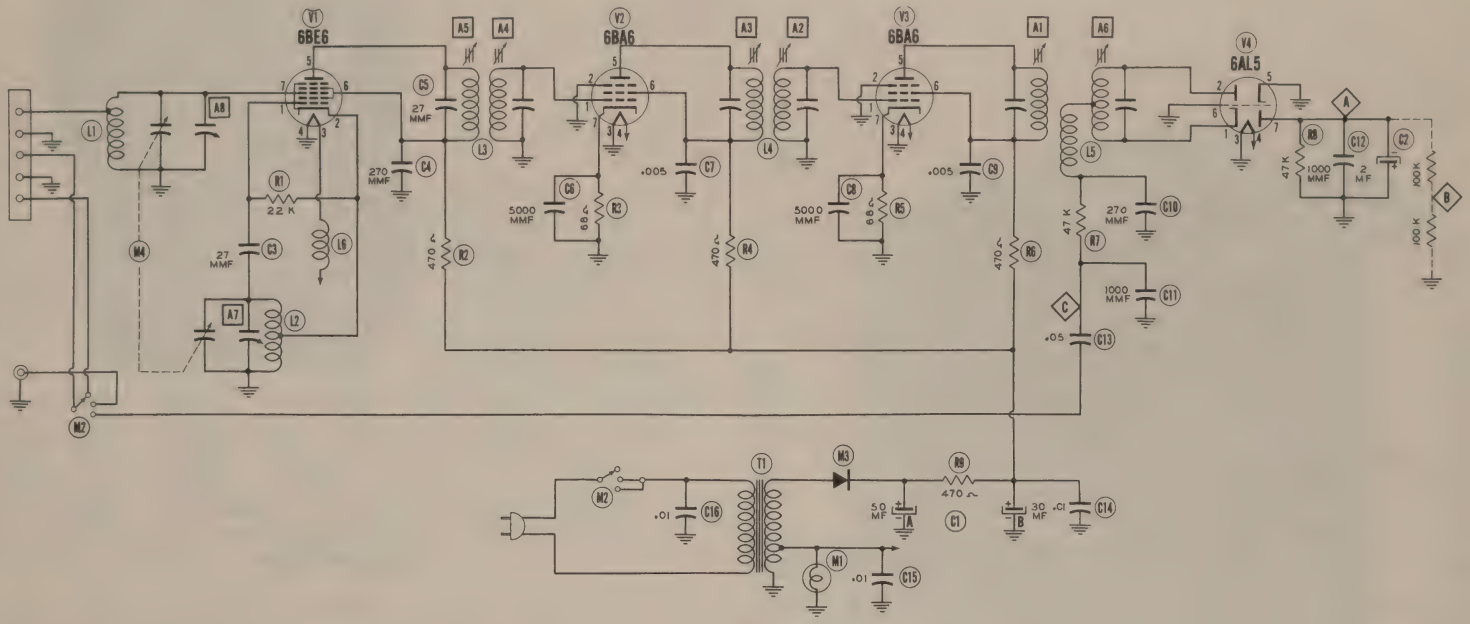




CHASSIS—BOTTOM VIEW



AIRCASTLE MODEL SC-448



IF = 455KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BE6	§-3VDC	0V	0V	6.3VAC	100VDC	100VDC	0V
V 2	6BA6	0V	0V	0V	6.3VAC	100VDC	100VDC	.8VDC
V 3	6BA6	0V	0V	0V	6.3VAC	100VDC	100VDC	.9VDC
V 4	6AL5	-.6VDC	-.3VDC	0V	6.3VAC	0V	0V	-.8VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BE6	22KΩ	0Ω	0Ω	.7Ω	*950Ω	*950Ω	0Ω
V 2	6BA6	.5Ω	0Ω	0Ω	5Ω	*950Ω	*950Ω	68Ω
V 3	6BA6	.5Ω	0Ω	0Ω	.5Ω	*950Ω	*950Ω	30Ω
V 4	6AL5	Inf.	Inf.	0Ω	.5Ω	0Ω	0Ω	47Ω

* Measured from junction of M3 and R9

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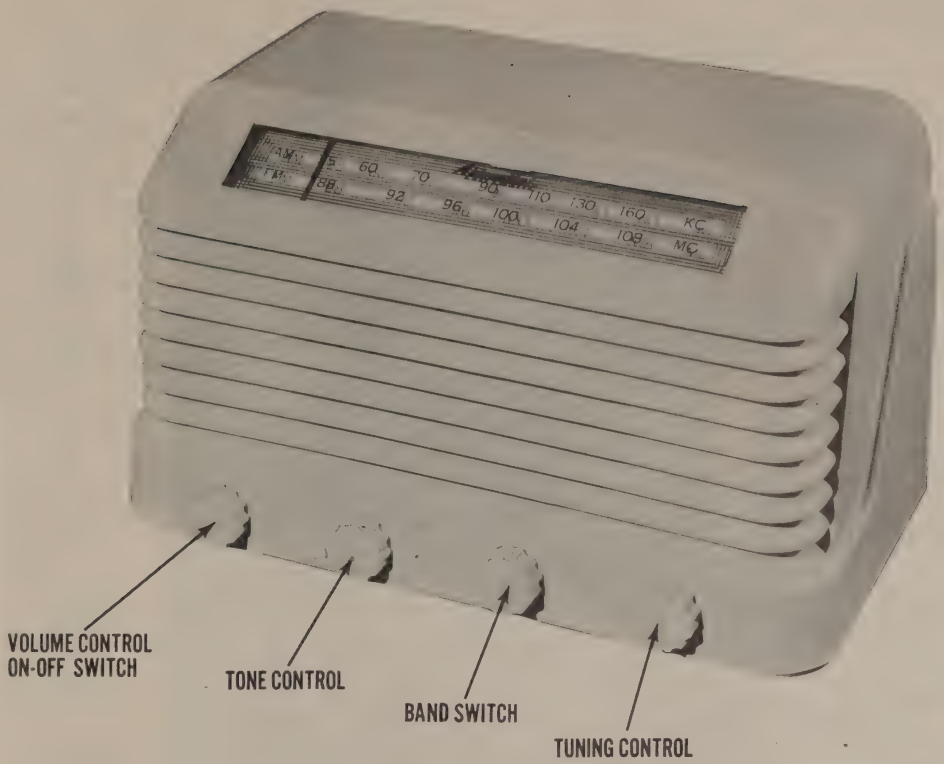
4910-2

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. No signal applied for voltage measurements.

AIRCASTLE
MODEL 10005



AIRCASTLE
MODEL 10005

AIRCASTLE MODEL 10005

TRADE NAME	Aircastle, Model 10005
SUPPLIER	Spiegel, Inc., 1061 W. 35th St., Chicago, Illinois
TYPE SET	AC-DC Operated AM-FM Superheterodyne Receiver with Loop Antenna
TUBES(EIGHT)	Types 12AT7 FM RF Amp.-Osc., 12BA6 FM Mixer, 12BE6 AM Converter, 12BA6 1st IF Amp., 12BA6 FM 2nd IF Amp., 12AL5 FM Detector, 6AQ6 AM DET-AVC-AF, 35B5 Power Output.
POWER SUPPLY	105-125 Volts AC-DC RATING .32 Amp., @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1720KC FREQ. MOD. 88-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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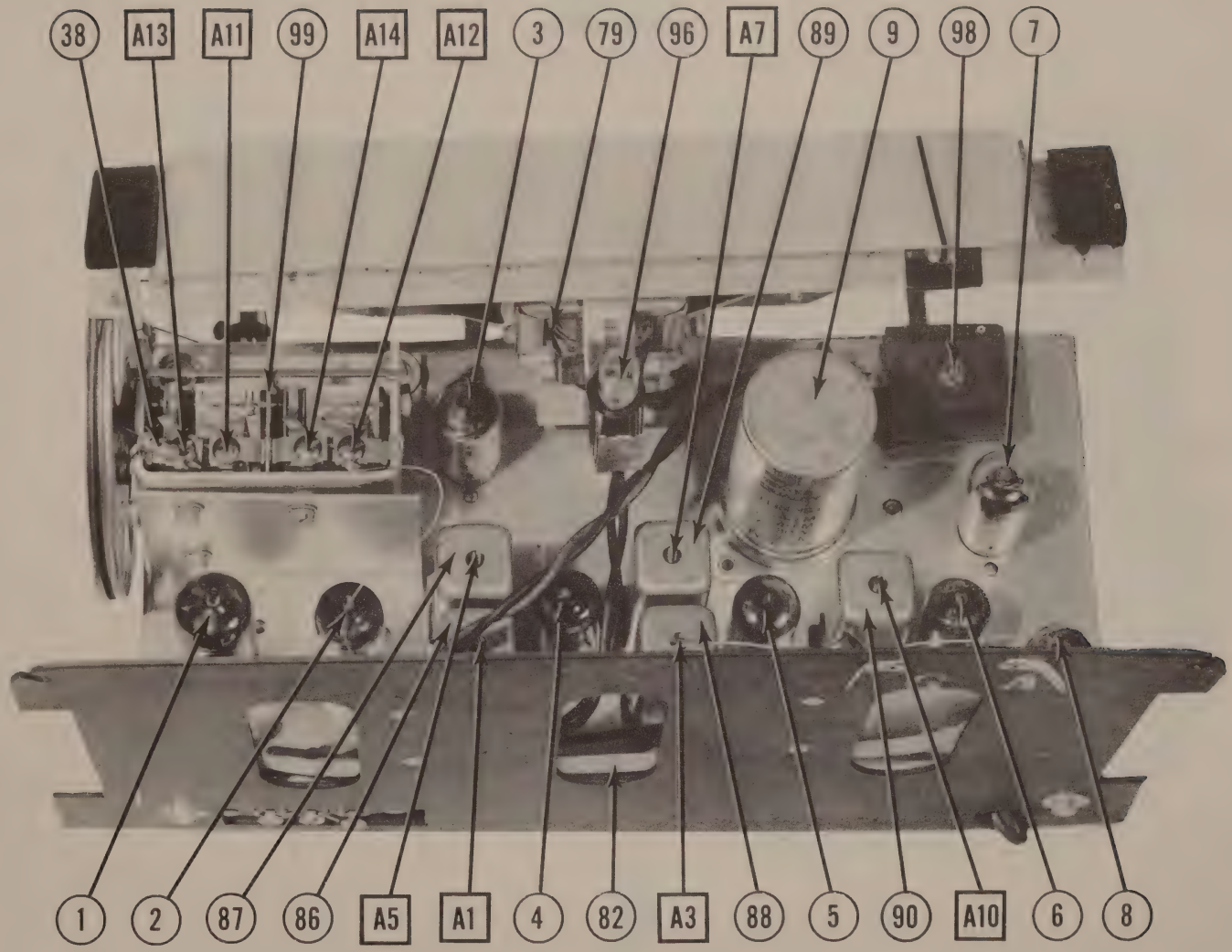
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5
90
A10
6
8

A
B
C
A2
A4
A6
A8
A9

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM RF Amp-Osc.	12AT7	12AT7		
2	FM Mixer	12BA6	12BA6	7BK	
3	AM Converter	12BE6	12BE6	7CK	
4	1st IF Amp.	12BA6	12BA6	7BK	
5	FM 2nd IF Amp.	12BA6	12BA6	7BK	
6	FM Detector	12AL5	12AL5	6BT	
7	AM DET-AVC-AF	6AV6	6AV6	7BT	
8	Power Output	35B5	35B5	7BZ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRCASTLE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	40	150	CL10025	AF886D4A*	UP4431		DY-419*	EL-443*	▲ Filter
B	40	150			5C*				■ "
C	30	150		PRS150/30			M-30-150	UT-301	▲ "
D	30	150							"
10	8	25		PRS25/10	BR102A		M-10-25	TA-10	Cathode Bypass
11	4	50	CL10027	PRS150/4	BR415		M-4-450	TA-55	Stabalizing Cap.
12	.02	400	CP-14203	484-02	DT4S2		ST-4-02	TM-12	Line Filter
13	.02	200	CP-12203	484-02	DT2S2		ST-4-02	TM-12	Audio Coupling
14	.02	200	CP-12203	484-02	DT2S2		ST-4-02	TM-12	AVC Filter
15	5000	450	CMX-10002	1467-005	1D5D5		MW.5-25	1FM-25	Output Plate Bypass
16	10000	450	Note 1	1467-01	1D3S1	GP2-335-01	MW.3-11	1FM-11	Audio Coupling
17	5000	450	CMX-10002	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	" "
18	3000	450		1467-003	1W5D3	GP2M-003	MW.5-23	1FM-23	Tone Comp.
19	200	400		1468-0002	5W5T2	GP2K-200	MO.5-32	1FM-32	Det. Diode Load Cap. Note 5
20	200	400		1468-0002	5W5T2	GP2K-200	MO.5-32	1FM-32	" " " " "
21	2000	450	CMX-10003	1467-002	1W5D2	GP2M-002	MW.5-22	1FM-22	De-emphasis
22	10000	450	CMX-10004	1467-01	1D3S1	GP2-335-01	MW.3-11	1FM-11	2nd IF Decoupling
23	10000	300	Note 2	1467-01	1D3S1	GP2-335-01	MW.3-11	1FM-11	2nd IF Cathode Bypass
24A	100	300	Note 3	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	AM Diode RF Filter
B	100	300		1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	" " " "
25	10000	450	CMX-10004	1467-01	1D3S1	GP2-335-01	MW.3-11	1FM-11	1st IF Decoupling
26	5000	450	CMX-10002	1467-005	1W5D5	GP2M-005	MW.5-25	1FM-25	AVC Filter
27	5000	450	CMX-10002	1467-005	1W5D5	GP2M-005	MW.5-25	1FM-25	AM Conv. Decoupling
28	50	300	CC-15500	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	AM Osc. Grid Cap.
29	10000	450	CMX-10004	1467-01	1D3S1	GP2-335-01	MW.3-11	1FM-11	Decoupling
30	5000	450	CMX-10002	1467-005	1W5D5	GP2M-005	MW.5-25	1FM-25	RF Bypass
31	500	300	CC-15501	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	" "
32	500	300	CC-15501	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	FM RF Plate Decoupling
33	100	300	CC-15101	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	RF Coupling
34	100	300	CC-15101	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	" "
35	500	300	CC-15501	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	FM RF Cathode Bypass
36	20	300	CC-15200	1468-000025	5W5Q2	GP1K-25	MOS.5-42	MS-42	FM Osc. Grid Cap.
37	2	300	CC-15020			NP0K-3			FM Osc. Feedback
38	2	300	CC-15020			NP0K-3			Fixed Trimmer
39	2	300	CC-15020			NP0K-3			FM Osc. Coupling Note 6
40	5000	300	CMX-10002	1467-005	1W5D5	GP2M-005	MW.5-25	1FM-25	FM Osc. Feedback
41	10000	450	CMX-10004	1467-01	1D3S1	GP2-335-01	MW.3-11	1FM-11	FM Ant. Isolation
42	100	300	Note 4	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	FM Line Ant. Coupling
43	500	300	CC-15501	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	Fil. Bypass
44	5000	450	CMX-10002	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	" "
45	5000	450	CMX-10002	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	" "
46	5000	450	CMX-10002	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	" "
47	5000	450	CMX-10002	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	" "
48	500	300	CC-15501	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	" "
49	100	300	CC-15101	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	FM Ant. Coupling Note 6

* Omit bypass section.
Note 1. Items 16 and 72 are combined into one unit.
Note 2. Items 23 and 64 are combined into one unit.
Note 3. Items 24A & B and 63 are combined into one unit.
Note 4. Items 42 and 53 are combined into one unit.
Note 5. Not used in all models.
Note 6. If either item 19 or 20 is replaced with a different value of cap, the other must be replaced with a cap. of equal value.

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: MEISSNER PART No.	
82	Loop Ant.	.1Ω	3Ω	AL-10027		
83	FM RF Coil		0Ω	TRF-10021		
84	BC Osc.Coil	.5Ω	4Ω	TRC-10018	14-1060	
85	FM Osc.Coil		0Ω	TRC-10019		
86	1st IF-AM	11Ω	13Ω	TS-10025		
87	1st IF-FM	.8Ω	.8Ω	TS-10028		
88	2nd IF-AM	12.5Ω	12.5Ω	TS-10026		
89	2nd IF-FM	.8Ω	.8Ω	TS-10028		
90	FM Ratio Det.	2.2Ω	.2Ω	TS-10027		
91	FM RF Cath. Choke		0Ω	LG-10006		8 turns wound on 1200Ω 1 Watt resistor.
92	FM RF Plate Choke		1.8Ω	LG-10005		
93	FM Osc. Cath. Choke		1.8Ω	LG-10005		
94	Fil. Choke		8.2Ω	LG-10003		
95A	Line Choke		0Ω	LG-10004		
B	Line Choke		0Ω	LG-10004		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA	NOTES
96	Bayonet	6-8V	0.15A	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
97	Switch	VS-10008	Band
98	Rectifier	RS-10000	Selenium (100MA)
99	2 Gang Var. Cap.	CV-10023	(26-512MMF, 13-192MMF)

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	
50A	500KΩ	½	VC-11105-C	D13-133	M-60-Z	Volume control
B	Shaft		Not Req.	A	Not Req.	Attach to 50A Per Instructions
C	Switch		Not Req.	41	SW-A	" " " "
51A	1 Meg.	½	VC-13105-B	D13-137	M-63-Z	Tone control
B	Shaft		Not Req.	A	Not Req.	Attach to 51A Per Instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	AIRCASTLE PART No.	IRC PART No.		
52	22KΩ	½	RC-12202	BTS-22K	Red-Red-Or.	AM Osc. Grid
53	100Ω	½	Note 4			FM Ant. Loading
54	220Ω	1	RC-12200		Red-Red-Br.	FM RF Cathode
55	22KΩ	½	RC-12202	BTS-22K	Red-Red-Or.	FM Osc. Grid
56	1000Ω	½	RC-11001	BTS-1000	Br.-Blk.-Red	FM Osc. Plate Load
57	470KΩ	½	RC-14703	BTS-470K	Yl.-Vi.-Yl.	Mixer Grid
58	2.2 Meg.	½	RC-12204	BTS-2.2 Meg.	Red-Red-Grn.	AVC Net.
59	470KΩ	½	RC-14703	BTS-470K	Yl.-Vi.-Yl.	" "
60	470Ω	½	RC-34700	BTS-470	Yl.-Vi.-Br.	Decoupling
61	68Ω	½	RC-10680		Blue-Gray-Blk.	1st IF Cathode
62	1000Ω	½	RC-11001	BTS-1000	Br.-Blk.-Red	1st IF Decoup.
63	47KΩ	½	Note 3	BTS-47K		Diode Filter
64	68Ω	½	Note 2			2nd IF Cathode
65	1000Ω	½	RC-11001	BTS-1000	Br.-Blk.-Red	2nd IF Decoup.
66	33Ω	½	RC-10330		Or.-Or.-Blk.	RF Filter
67	6800Ω	½	RC-16801	BTS-6800	Blue-Gray-Red	Det. Diode Load
68	6800Ω	½	RC-16801	BTS-6800	Blue-Gray-Red	" " "
69	47KΩ	½	RC-14702	BTS-47K	Yl.-Vi.-Or.	De-emphasis
70	10 Meg.	½	RC-11005	BTS-10 Meg.	Br.-Blk.-Blue	AF Grid
71	220KΩ	½	RC-12203	BTS-220K	Red-Red-Yl.	AF Plate Load
72	470KΩ	½	Note 1	BTS-470K		Output Grid
73	150Ω	½	RC-11500	BW-½-150	Br.-Grn.-Br.	Output Cathode
74	500Ω	1		BTA-470	Grn.-Blk.-Br.	Filter
75	300Ω	1	RC-43000	BW-1-270	Or.-Blk.-Br.	"
76	220Ω	1	RC-42200	BW-1-220	Red-Red-Br.	Dial Light Shunt
77	15Ω	½	RC-30150	BW-½-15	Br.-Grn.-Blk.	Rect. Ballast
78	220KΩ	½		BTS-220K	Red-Red-Yl.	FM Ant. Isolation

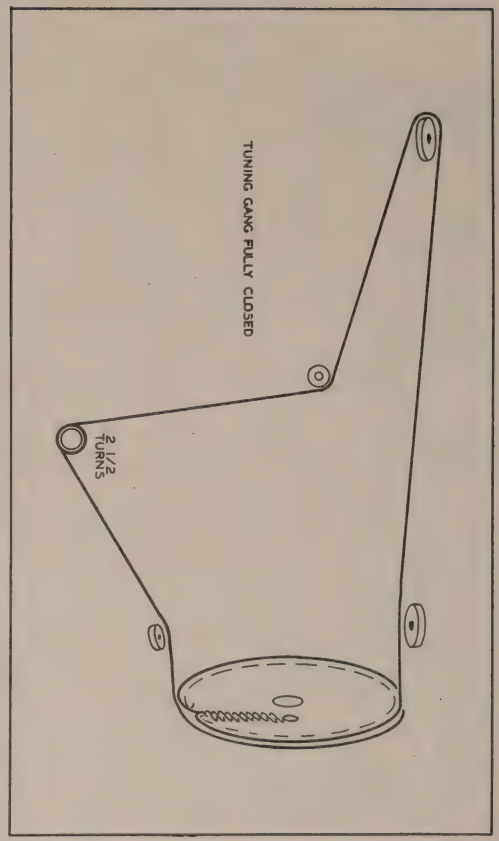
Note 1. Items 72 and 16 are combined into one unit.
Note 2. Items 64 and 23 are combined into one unit.
Note 3. Items 63 and 24A and B are combined into one unit.
Note 4. Items 53 and 42 are combined into one unit.

TRANSFORMER (OUTPUT)

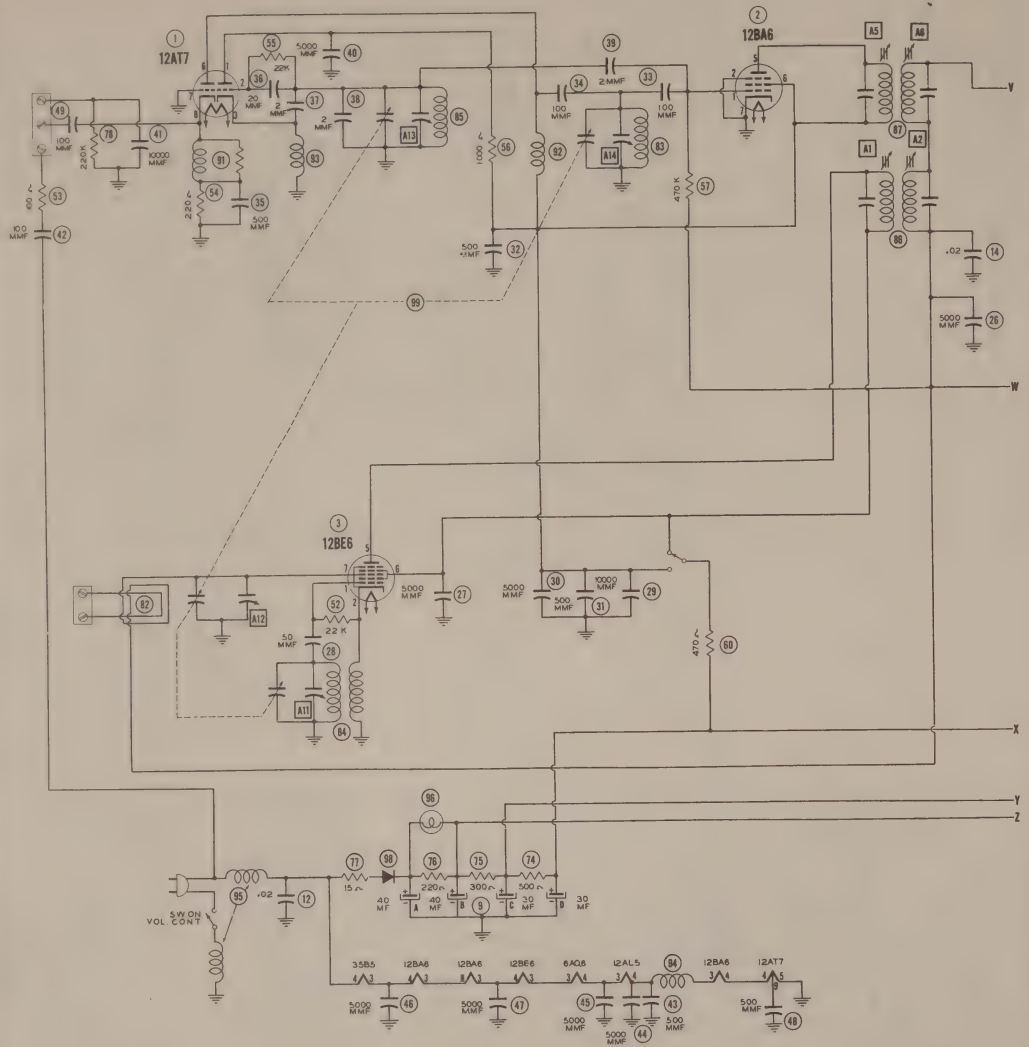
ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRCASTLE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
79	1900Ω	3.4Ω	186Ω	.5Ω	TO-10000	A-3876 #	RO-2 #	A-2928 #	# Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	V. C. IMP.	AIRCASTLE PART No.	JENSEN PART No.	QUAM PART No.	
80	PM	3.4Ω	46AM-2T		46A07 †	† Drill and tap magnet frame.
	CONE DIA.	V. C. DIA.				
81	4 x 6	9/16"				



DATE 5/49 4910-3 SET #62 FOLDER 3



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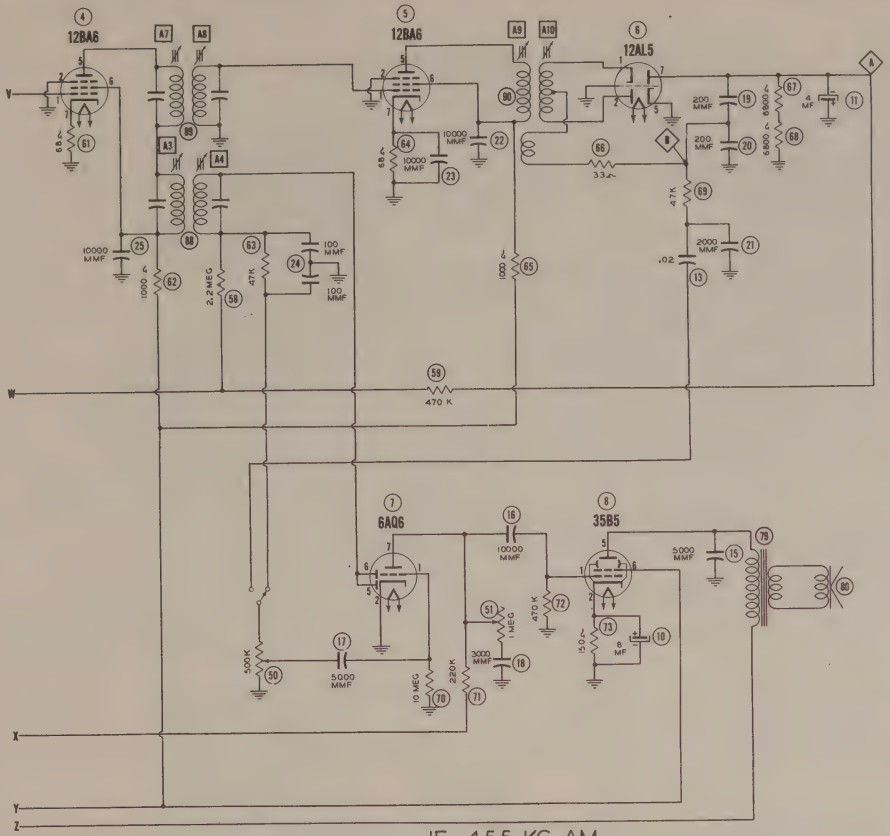

IF = 455 KC AM

IF = 10.7 MC FM

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡ 1	12AT7	85VDC	31VDC	0V	12VAC	0V	87VDC	0V	.8VDC
‡ 2	12BA6	+8VDC	0V	25VAC	12VAC	87VDC	87VDC	0V	
3	12BE6	5-6.2VDC	0V	47VAC	55VAC	100VDC	100VDC	-.4VDC	
4	12BA6	-4VDC	0V	55VAC	70VAC	100VDC	100VDC	.7VDC	
‡ 5	12BA6	0V	0V	70VAC	80VAC	92VDC	92VDC	1VDC	
‡ 6	12AL5	-.7VDC	-.2VDC	40VAC	28VAC	0V	0V	-.8VDC	
7	6AQ6	+3VDC	0V	47VAC	40VAC	-.4VDC	-.4VDC	50VDC	
8	35B5	0V	5.7VDC	80VAC	117VAC	113VDC	108VDC	0V	

‡TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡ 1	12AT7	28 KΩ	22KΩ	1.8Ω	11Ω	0Ω	25KΩ	0Ω	1.7KΩ
‡ 2	12BA6	3.2Meg.	0Ω	22Ω	11Ω	25KΩ	24KΩ	0Ω	
3	12BE6	22KΩ	.5Ω	52Ω	60Ω	25KΩ	25KΩ	2.7Meg.	
4	12BA6	2.7Meg.	0Ω	60Ω	75Ω	25KΩ	25KΩ	6Ω	
‡ 5	12BA6	.6Ω	0Ω	7Ω	8Ω	25KΩ	25KΩ	5Ω	
‡ 6	12AL5	Inf.	Inf.	44Ω	30Ω		0Ω	2.2Meg.	
7	6AQ6	10Meg.	0Ω	52Ω	44Ω	550KΩ	550KΩ	240KΩ	
8	35B5	470KΩ	150Ω	85Ω	115Ω	25KΩ	25KΩ	470KΩ	

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis.
Use insulated alignment screwdriver for all adjustments.

AM IF ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to large AM stator of tuning cap. Low side to chassis.	455KC	AM (Counter clock-wise)	Tuning cap fully open	Across voice coil	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001 MFD to reduce hum modulation.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connnect 1 MegΩ resistor in series with each side of VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
2.	.01MFD	High side to pin 1 (Grid) of 12BA6 FM Mixer Tube (2). Low side to chassis.	10.7MC (Unmod.)	FM	Tuning cap fully open	DC Probe to point (A) Common to chassis. See prealignment instructions.	A5, A6 A7, A8 A9	Adjust for maximum deflection.
3.	.01MFD	"	"	"	"	DC Probe to point (B) Common to chassis.	A10	Adjust for zero deflection. Continue with AM-RF Alignment in step 5.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60$\sim$ modulation and 450KC sweep. Use 120$\sim$ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
2.	.01MFD	High side to pin 1 (Grid) of 12BA6 1st IF Tube (3). Low side to chassis.	10.7MC (Freq. Mod.)	FM (clock-wise)	Tuning cap fully open	Vertical input to point (A) Ground to chassis.	A9, A8 A7	Disconnect 4MFD cap (11) from point A. Adjust A9, A8, and A7 for maximum amplitude, symmetry and coincidence of pattern per Fig. 1.
3.	.01MFD	High side to pin 1 (Grid) of 12BA6. FM Mixer Tube (2). Low side to chassis.	"	"	"	"	A5, A6	Adjust for maximum amplitude symmetry and coincidence of pattern per Fig. 1. Reconnect cap (11) to point A.
4.	.01MFD	"	"	"	"	Vertical input to point (C) Ground to chassis.	A10	Adjust for crossover of diagonal lines occurring at scope horizontal sweep line per Fig. 2. Continue with AM RF alignment in step 5.

AM RF ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
5.	200MMFD	High side to ext AM Ant. terminal "A". Low side to terminal "G".	1720KC	AM (counter clock-wise)	Tuning cap fully open	Across voice coil	A11	Adjust for maximum output.
6.	200MMFD	"	1400KC	"	Tune for maximum output.	"	A12	" " " "

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	300Ω carbon res.	High side to FM Ant. terminal "2". Low side to terminal "3".	108MC (Unmod.)	FM (clock-wise)	Tuning cap fully open	DC Probe to point (A) Common to chassis.	A13	Adjust for maximum deflection.
8.	300Ω carbon res.	"	105MC (Unmod)	"	Tune for maximum deflection	"	A14	Rock tuning cap and adjust for maximum deflection.

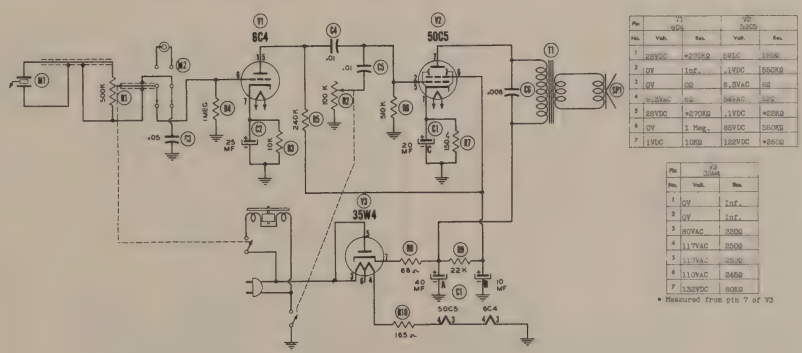
FIG. 1

FIG. 2

MODEL LP-3

MODEL LP-2

TRADE NAME	Arthur Ansley, Models LP2, LP-3
MANUFACTURER	Arthur Ansley Mfg. Co., Doylestown, Pennsylvania
TYPE SET	AC Operated Phono Player with 3 Tube Amplifier
TUBES (THREE)	Types 6C4 AF Amp., 50C5 Power Output, 35W4 Rectifier
POWER SUPPLY	105-120 Volts AC RATING .21 Amp. @ 117 Volts AC



Pin No.	V1 6C4 Volt.	Res.	V2 50C5 Volt.	Res.
1	88VDC	*270KΩ	6VDC	180Ω
2	0V	Inf.	.1VDC	550KΩ
3	0V	0Ω	8.3VAC	0Ω
4	6.3VAC	0Ω	84VAC	38Ω
5	88VDC	*270KΩ	.1VDC	*22KΩ
6	0V	1 Meg.	86VDC	550KΩ
7	1VDC	10KΩ	122VDC	*26ΚΩ

Pin No.	V3 35W4 Volt.	Res.
1	0V	Inf.
2	0V	Inf.
3	80VAC	22Ω
4	117VAC	25Ω
5	117VAC	25Ω
6	110VAC	24Ω
7	132VDC	80Ω

* Measured from pin 7 of V3

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4910-4

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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DATE 5/49 4910-4 SET #62 FOLDER 4

ARTHUR ANSLEY
MODELS LP-2, LP-3

ARTHUR ANSLEY
MODELS LP-2, LP-3

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ARTHUR ANSLEY PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	AF Amp.	6C4	6C4	6BG	
V2	[illegible]	50C5	50C5		
V3	Rectifier	35W4	35W4	5BJ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: A. ANSLEY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150		PRSA40302	EDI4215C		DSB-301	TA-305	Yellow Filter
B	10	150							Red Filter
C	25	25							Blue Output Cath. Byp.
C2	25	25		PRS25/25	BR252A		M-25-25	TA-25	AF Cathode Bypass
C3	.05	400		P488-05	GT4S5		ST-4-05	TM-15	Isolation
C4	.01	400		P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Audio Coupling Note 1
C5	.01	400		P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Tone Comp. Note 1
C6	.006	600		P688-006	GT6D6		ST-6-006	TM-26	Output Plate Byp. Note 2

Note 1. Model LP-2 used .006 MFD in this application
Note 2. Not used in model LP-2.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: A. ANSLEY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½		D13-133	M-60-Z	Volume control
B	Shaft			A	Not Req.	Attach to R1A Per Instructions
C	Switch			41	SW-A	" " " "
R2A	100KΩ	½		D13-128	M-81-Z	Tone Control
B	Shaft			A	Not Req.	Attach to R2A Per Instructions
C	Switch			41	SW-A	" " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARTHUR ANSLEY PART No.	IRC PART No.	IDENTIFICATION CODES	
R3	10KΩ	½		BTS-10K	Br.-Blk.-Or.	AF Cathode
R4	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn.	AF Grid
R5	240KΩ	½		BTS-220K	Red-Yl.-Yl.	AF Plate
R6	510KΩ	½		BTS-470K	Grn.-Br.-Yl.	Output Grid
R7	150Ω	½		BW-½-150	Br.-Grn.-Br.	Output Cathode
R8	68Ω	1			Blue-Gray-Blk.	Surge Limiter
R9	22KΩ	1		BTA-22K	Red-Red-Or.	Filter
R10	165Ω	7		ABA-200 #		Line Dropping

Set slider at 165Ω.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ARTHUR ANSLEY PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	INSTALLATION NOTES
T1	2300Ω	3.2Ω	192Ω	.6Ω		A-3876	RO-2	A-2928	

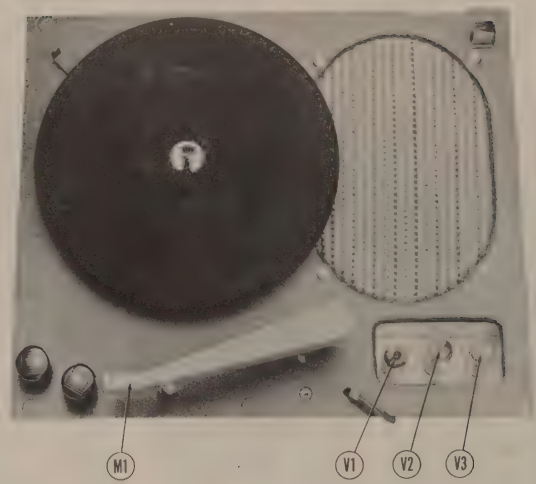
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: ARTHUR ANSLEY PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
SP1	FIELD	V. C. IMP.		ST-110		
	PM	3.2Ω		MOD. P69-V	69A3	
SP2	CONE DIA.	V. C. DIA.				
	6 x 9	3/4"				

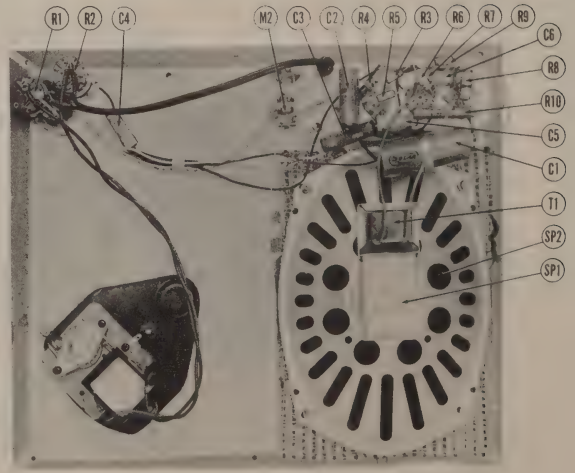
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: A. ANSLEY PART No.	REPLACEMENT DATA: ASTATIC PART No.	REMARKS
M1A		L92-33	Model LP-2
B		LP-78	Model LP-3 (Standard)
C		LP-33	Model LP-3 (Long-Play)

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW



AUDAR MODELS (TELVAR)
BM-25, BMP-25

AUDAR MODELS (TELVAR)
BM-25, BMP-25

AUDAR MODEL BMP-25

TRADE NAME	Audar, Models (Telvar) BM-25, BMP-25
MANUFACTURER	Audar Inc., Argos, Indiana
TYPE SET	AC or 6 Volt Storage Battery Operated Mobile Audio Amplifier
TUBES (SIX)	Types 6SJ7 Mic. Pre-Amp., 6SC7 Mixer-Phase Inv., (2) 6L6G Power Output (2) 6X5GT Rectifier
POWER SUPPLY RATING	110-120 Volts AC or 6 Volt Storage Battery .78 Amp. @ 117 Volts AC or 10 Amp. @ 6 Volts DC

OUTPUT CONNECTIONS

For 8 ohm speakers, connect voice coil leads of speaker to pins 1 and 4 of 4 prong plug. If it is desired to use one 8 ohm speaker insert plug into speaker socket marked "A" on the schematic diagram. For two eight ohm speakers insert plugs into sockets marked "B" and "C".

For a 16 ohm speaker the connections are made to pins 1 and 3 of speaker socket "A".

For a 250 ohm line, connect to pins 1 and 2 of speaker socket "B".

For 500 ohm line, connect to pins 1 and 2 of speaker socket "A".

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PARTS LIST AND DESCRIPTIONS

AUDAR
MODEL AMI-25

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AUDAR PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Mic. Pre-Amp.	6S17	6S17	8N	
V2	Mixer-Phase Inv.	6SC7	6SC7	8S	
V3	Power Output	6L6G	6L6G	7AC	
V4	Power Output	6L6G	6L6G	7AC	
V5	Rectifier	6X5GT	6X5GT	6S	
V6	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AUDAR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	40	475		AF44J*	UP2245*		DY-2x20-450*	EL-220*	Filter Note
C2A	10	475		AF44J	UP3145		DY-2x20-450	EL-344*	▲ Filter ■ Decoupling
B	30	475							
C3	25	50		PRS50/25	BR225		M-25-50	TA-525	Output Cath. Bypass
C4	10	50		PRS50/10	BR105		M-10-50	TA-510	Mic. Pre-Amp. Cath. Byp.
C5	.1	200		P288-1	GT2P1		ST-2-1	TM-1	Mic. Pre-Amp. Screen Byp.
C6	.02	400		P488-02	GT4S2		ST-4-02	TM-12	Audio Coupling
C7	.02	400		P488-02	GT4S2		ST-4-02	TM-12	Tone Comp.
C8	.1	200		P288-1	GT2P1		ST-2-1	TM-1	Audio Coupling
C9	.1	200		P288-1	GT2P1		ST-2-1	TM-1	" "
C10	.005	1600		P1688-005	GT16D5		STM-16-005	MB-25	Buffer
C11	.25	400		P488-25	GT4P25		ST-4-25	TC-2	Line Filter
C12	.1	200		P288-1	GT2P1		ST-2-1	TM-1	" "
C13	.25	400		P488-25	GT4P25		ST-4-25	TC-2	Hash Filter

* Parallel sections to obtain desired capacity.
Note. Some models use 20-10-10MFD capacitor in this application.

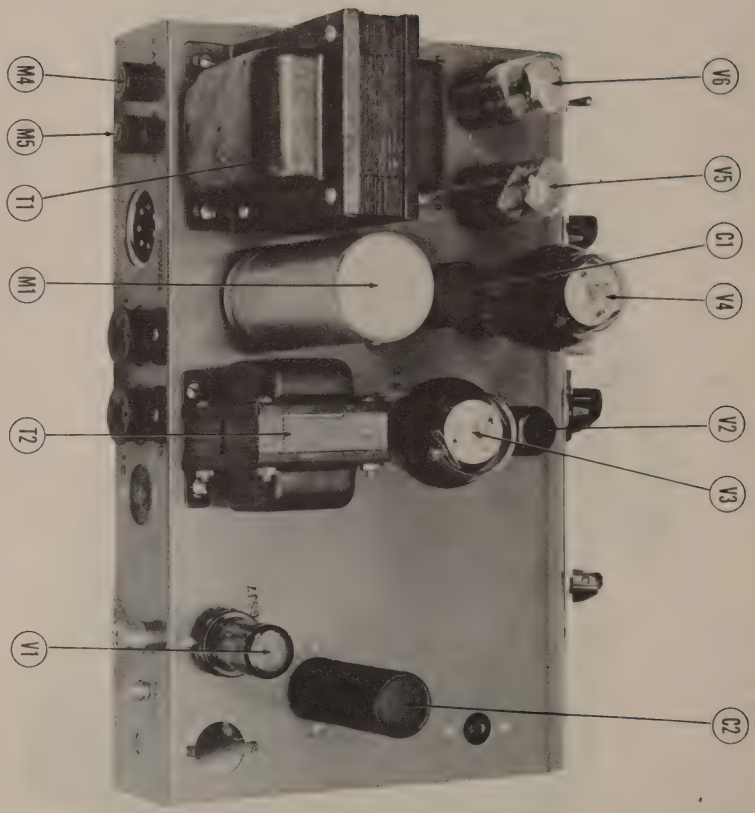
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUDAR PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½		D11-133	M-58-S	Mike control
B	Shaft			A	Not Req.	Attach to R1A Per Instructions
R2A	500KΩ	½		D11-133	M-58-S	Phono Control
B	Shaft			A	Not Req.	Attach to R2A Per Instructions
R3A	500KΩ	½		D13-133	M-60-Z	Tone control
B	Shaft			A	Not Req.	Attach to R3A Per Instructions
C	Switch			41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUDAR PART No.	IRC PART No.	IDENTIFICATION CODES	
R4	2 Meg.	½		BTS-2.2 Meg.	Red-Blk.-Grn.	Mike Amp. Grid
R5	1000Ω	½		BTS-1000	Br.-Blk.-Red	Mike Amp. Cathode
R6	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn.	Mike Amp. Screen
R7	220KΩ	½		BTS-220K	Red-Red-Yl.	Mike Amp. Plate
R8	240KΩ	½		BTS-220K	Red-Yl.-Yl.	Isolation
R9	1500Ω	½		BTS-1500	Br.-Grn.-Red	Mixer Cathode
R10	220KΩ	½		BTS-220K	Red-Red-Yl.	Mixer Plate
R11	220KΩ	½		BTS-220K	Red-Red-Yl.	Phase Inverter Plate
R12	5KΩ	½		BTS-4700	Grn.-Blk.-Red	Phase Inverter Grid
R13	220KΩ	½		BTS-220K	Red-Red-Yl.	Output Grid
R14	220KΩ	½		BTS-220K	Red-Red-Yl.	Output Grid
R15	220Ω	10		AB-250		Output Cathode
R16	22KΩ	½		BTS-22K	Red-Red-Or.	Filter
R17	6500Ω	10		AB-6000		Filter
R18	220Ω	1		BW-1-220	Red-Red-Br.	Hash Suppression
R19	220Ω	1		BW-1-220	Red-Red-Br.	Hash Suppression

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	AUDAR PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
T1	117VAC @ .79A or 6VDC @ 10A	650VAC CT .117ADC	6.2VAC @ 3.5A			P-6166†		

† Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AUDAR PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	6000Ω CT	500Ω 250Ω 16Ω 8Ω 4Ω 2Ω	140Ω CT	18Ω 12Ω .8Ω .5Ω .4Ω .3Ω		A-3307 †	PCO-80 †	A-3130	† Drill new mounting holes.

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				AUDAR PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	Interupter	6VDC	60~		427		

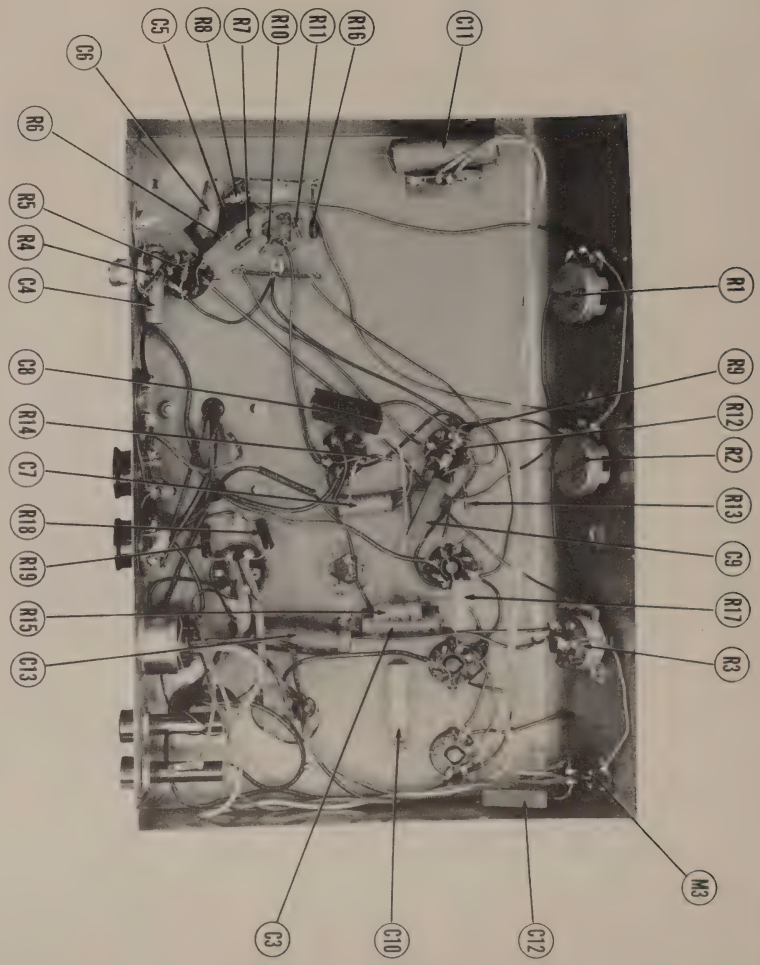
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA		REMARKS
	AUDAR PART No.	ASTATIC PART No.	
M2		L-40A	

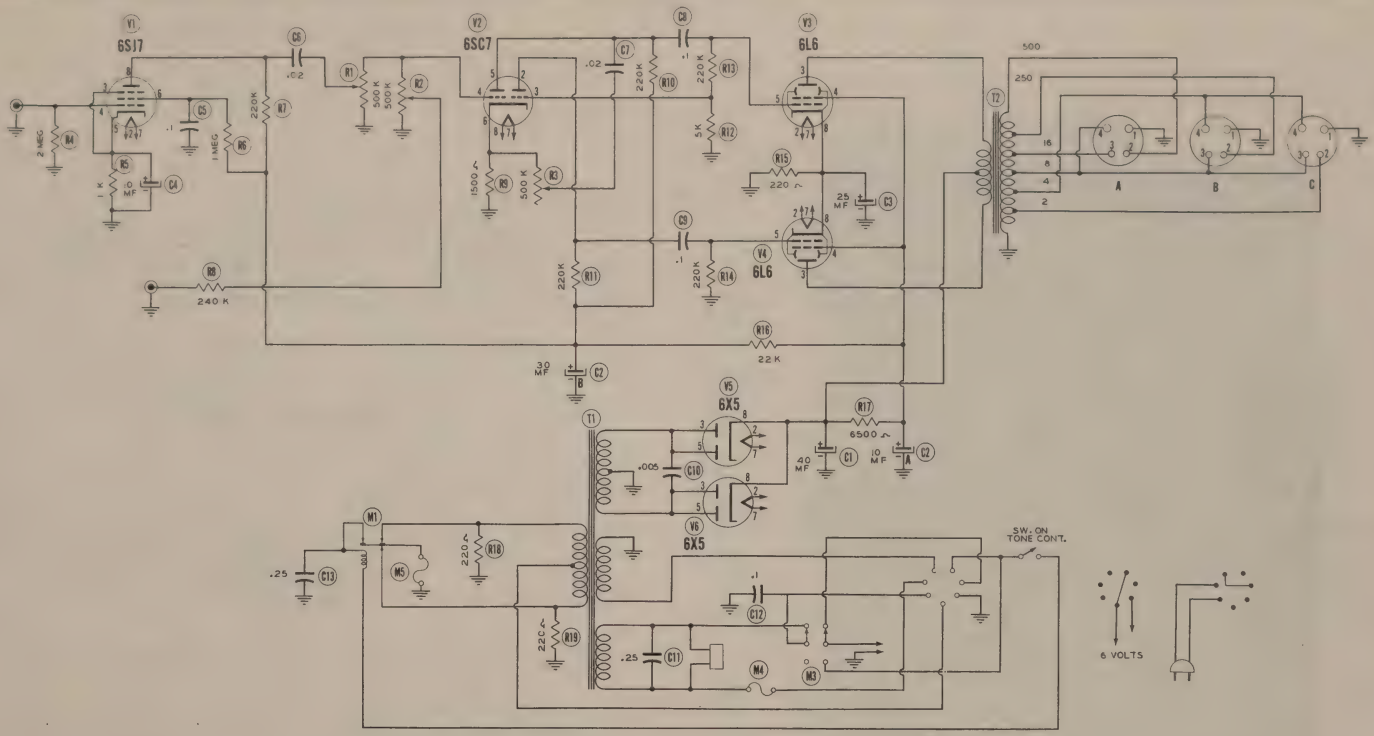
MISCELLANEOUS

ITEM No.	PART NAME	AUDAR PART No.	NOTES
M3	Switch		AC-Battery
M4	Fuse		5 Amp.
M5	Fuse		20 Amp. 32 Volt

CHASSIS—BOTTOM VIEW



AUDAR MODEL BMP-25



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6S17	0V	0V	1VDC	0V	1VDC	32VDC	6.3VAC	90VDC
V 2	6SC7	0V	155VDC	0V	0V	1.0VDC	1.7VDC	6.3VAC	0V
V 3	6L6G	0V	0V	370VDC	330VDC	.3VDC	0V	6.3VAC	25VDC
V 4	6L6G	0V	0V	370VDC	330VDC	.1VDC	0V	6.3VAC	25VDC
V 5	6X5	0V	0V	320VAC	0V	320VAC	0V	6.3VAC	330VDC
V 6	6X5	0V	0V	320VAC	0V	320VAC	0V	6.3VAC	330VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6S17	0Ω	0Ω	100K	2.2 Meg.	100K	* 1 Meg.	.2Ω	240KΩ
V 2	6SC7	0Ω	*220KΩ	1MΩ	240KΩ	*22KΩ	1500Ω	.2Ω	0Ω
V 3	6L6G	0Ω	0Ω	*70Ω	*6.5KΩ	225Ω	0Ω	.2Ω	250Ω
V 4	6L6G	0Ω	0Ω	*60Ω	*6.5KΩ	225Ω	Inf.	.2Ω	250Ω
V 5	6X5	Inf.	0Ω	75Ω	Inf.	75Ω	Inf.	.2Ω	10KΩ
V 6	6X5	0Ω	0Ω	80Ω	Inf.	85Ω	Inf.	.2Ω	11KΩ

* Measured from pin 8 of V6.

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4910-5

1. DC Voltage measurements are at 20,000 ohms per volt, AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

BUICK MODEL
980782

BUICK MODEL
980782

BUICK, MODEL 980782

TRADE NAME	Buick, Model 980782
SUPPLIER	Buick Motor, Div. of General Motors Corp., Detroit, Michigan
TYPE SET	Battery Operated Custom Built Superheterodyne Automotive Receiver
TUBES (SIX)	Types 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SR7 DET-AVC-AF, (2) 6V6GT Power Output.
POWER SUPPLY	6 Volt Storage Battery — RATING 7.5 Amp., @ 6 Volts DC
TUNING RANGE—BROADCAST	550-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The dummy antenna of 56MMF is a critical value and must be used to assure accurate alignment. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 8 (Grid) of 6SA7 (V2). Low side to chassis.	260KC	Tuning cap fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	56MMF	High side to antenna connector. Low side to chassis.	1615KC	"	"	A5, A6	Before adjusting A5 for max. output, mechanically set the rear of Osc. coil core (A6) 1 25/32" from the mounting end of the coil form.
3.	56MMF	"	"	"	"	A7, A8	Adjust for maximum output.
4.	56MMF	"	1400KC	Tune for max. signal.	"	A9, A10	Adjust for maximum output. Then repeat step 3.
5.	56MMF	"	1000KC	"	"		Turn the dial pointer adjustment screw so the pointer indicates 1000KC.

Install receiver in car and tune in weak station near 1400KC and readjust A7 for maximum volume.

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PARTS LIST AND DESCRIPTIONS

BUICK MODEL 950792

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BUICK PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	6SK7	6SK7	8N	
V2	Converter	6SA7	6SA7	8R	
V3	IF Amp.	6SK7	6SK7	8N	
V4	Det-AVC-AF	6SR7	6SR7	8Q	
V5	Power Output	6V6GT	6V6GT	7AC	
V6	Power Output	6V6GT	6V6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BUICK PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	440	7240612	AF44J	UP2245		DY-2x20-450	EL-220	■ Filter
B	20	400							▲ Filter
C2A	20	25	7236553	AF444D	UP222		DY-3x20-25	EL-325	■ AF Cath. Bypass
B	20	25			-25				▲ Bias Filter
C	20	25							Output Cath. Bypass
C3	.05	200	7236842	P285-05	GT2S5		ST-4-05	TM-15	AVC Filter
C4	220	500	7236105	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	RF Coupling
C5	39	500	7258221	1469-00004	5R5Q4		MOS.5-44	MS-44	Fixed Trimmer
C6	300		7258162						Fixed Trimmer
C7	.1	400	7238788	P488-1	GT4P1		ST-4-1	TM-1	Decoupling
C8	47	500	7233313	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	IF Coupling
C9	.005	600	7232956	P488-005	GT6D5	GP2M-005	ST-6-005	TM-25	Audio Coupling
C10	120	500	7240577	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Tone Compensation
C11	.0025	400	7240578	P488-0022		GP2M-0025			Tone Compensation
C12	220	500	7236105	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	AF Plate Bypass
C13	.2	400	7240579	P488-22	GT4P2		ST-4-2	TC-2	Audio Coupling
C14	.025	400	1211232	P488-025	GT4S25				Tone Compensation
C15	.0015	800	7236184	P1088-0015	GT16D1		STM-16-001	TR-21	Output Plate Bypass
C16	.007	3000	7257439						Buffer
C17	560	500	7240579	1468-0005	1W5T6	GP2K-500	MO.5-36	1FM-35	RF Bypass
C18	.5	200	7236621	P288-5	GT2P5		ST-2-5	TC-5	Hash Filter
C19	560	500	7240566	1468-0005	1W5T6	GP2K-500	MO.5-36	1FM-35	Filament Bypass

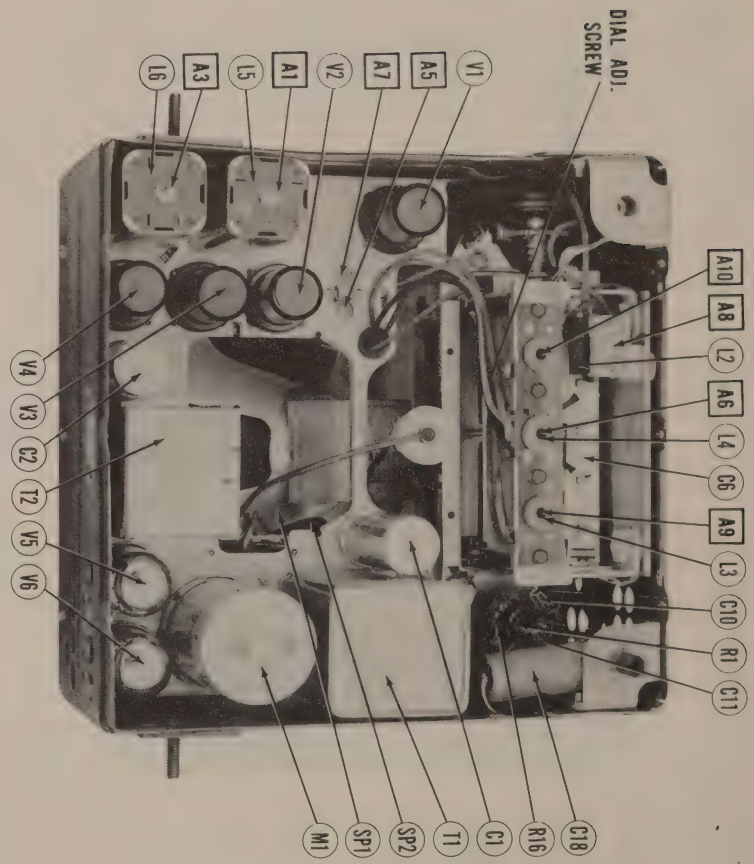
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BUICK PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	7256847			Volume control & Sw. tapped @ 250KΩ
B	250KΩ	½				Tone control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BUICK PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES	
R2	100Ω	½	1213217	BW-½-100	Br.-Blk.-Br.	RF Cathode
R3	2.2 Meg.	½	1214563	BTS-2.2 Meg.	Red-Red-Grn.	RF Grid
R4	330KΩ	½	1214567	BTS-330K	Or.-Or.-Yl.	AVC Network
R5	15KΩ	2	7233653	BT-2-15K	Br.-Grn.-Or.	RF Screen
R6	6.8 Meg.	½	1215563	BTS-6.8 Meg.	Blue-Gray-Grn.	Osc. Grid
R7	22KΩ	½	1214550	BTS-22K	Red-Red-Or.	Osc. Grid
R8	15KΩ	1	7237595	BTA-15K	Br.-Grn.-Or.	RF Plate
R9	1 Meg.	½	1213282	BTS-1 Meg.	Br.-Blk.-Grn.	AVC Network
R10	1 Meg.	½	1213282	BTS-1 Meg.	Br.-Blk.-Grn.	Diode Load
R11	27KΩ	1	1213342	BTA-27K	Red-Vi.-Or.	AF Plate
R12	2200Ω	½	1214545	BTS-2200	Red-Red-Red	AF Grid
R13	220KΩ	½	1214555	BTS-220K	Red-Red-Yl.	Diode Load
R14	680Ω	½	1214543	BTS-680	Blue-Gray-Br.	AF Cathode
R15	330Ω	½	1213224	BTA-330	Or.-Or.-Br.	AF Cathode
R16	68KΩ	½	1213844	BTS-68K	Blue-Gray-Or.	Tone Compensation
R17	330Ω	2	1214572	BW-2-330	Or.-Or.-Br.	Output Cathode
R18	1800Ω	2	1214573	BT-2-1800	Br.-Gray-Red	Filter
R19	6800Ω	1	1216154	BTA-6800	Blue-Gray-Red	Series Buffer

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	BUICK PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
T1	6VDC @ 7.4A	660VCT @ .065 mLC			7256939			P-4071

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		BUICK PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
TOA	9300Ω	3.7Ω	36Ω	.3Ω	7240464				
B	PRI. Matched to P-P Grids		SEC. 1800Ω						Coupling Choke

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			BUICK PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-117	8A31	
SP1	PM	3.7Ω	7255835	MOD. P8-T		
	C. NE DIA.	V. C. DIA.				
SP2	7 1/4"	7/8"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	BUICK PART No.	MEISSNER PART No.	
L1	Ant. Coil	7Ω		7257979		
L2	Ant. Choke	4Ω		7240251		
L3	RF Coil	7Ω		7257979		
L4	Osc. Coil	.5Ω	4Ω	7256148		
L5	Input IF	32Ω	32Ω	7238546		
L6	Output IF	30Ω		7240467	16-6652	
L7	Spark Choke	0Ω		7241701		

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				BUICK PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	Sync.	6.0V	115∿	3030	D26	5426	Original part No. 7238525

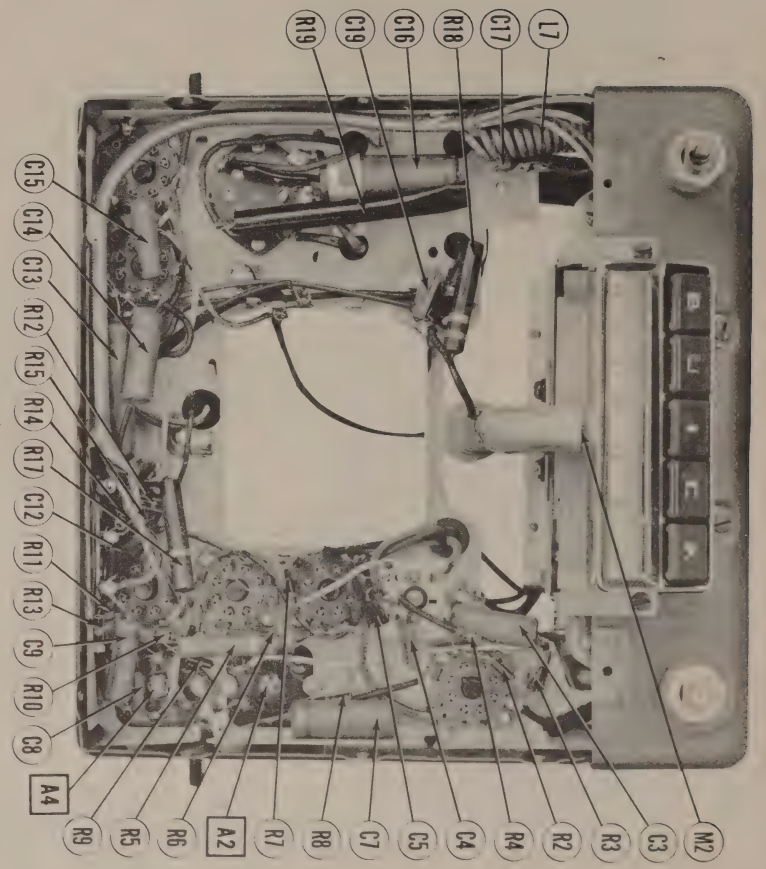
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					BUICK PART No.		
M2	Bayonet	6-8V	0.4A	White	125588		Type #55

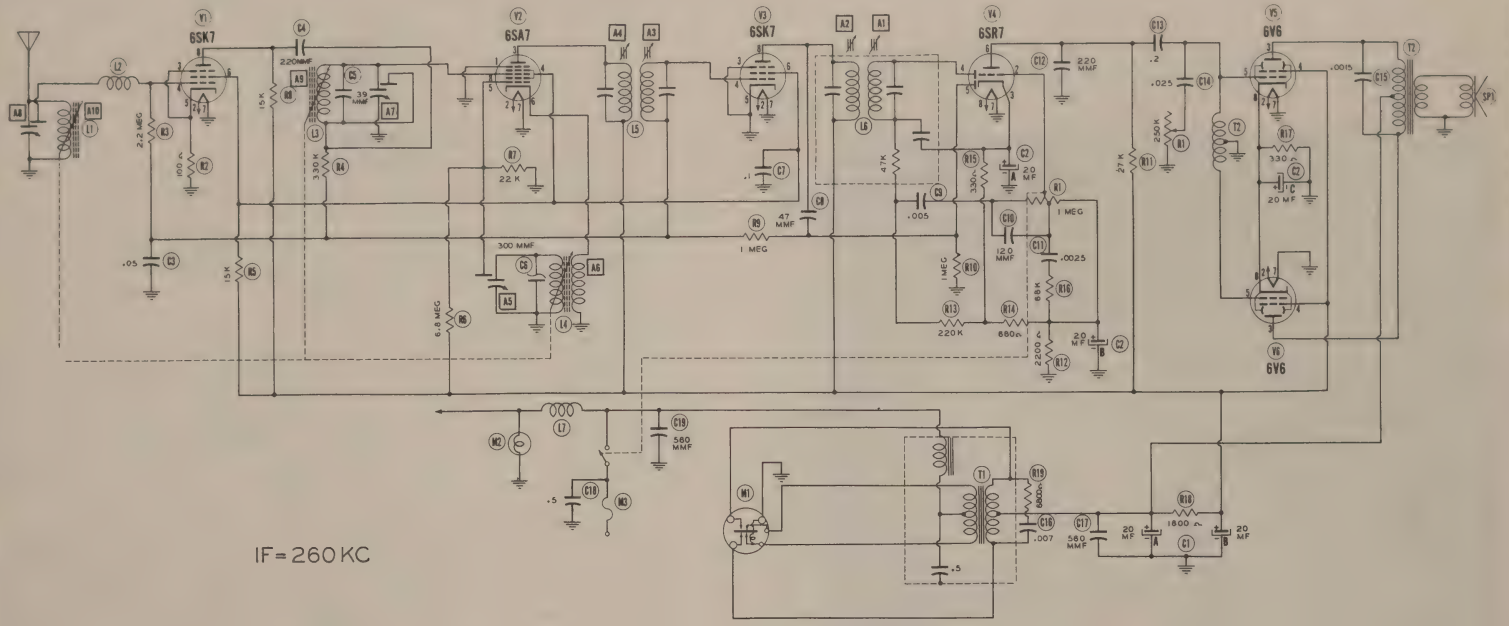
MISCELLANEOUS

ITEM No.	PART NAME	BUICK PART No.	NOTES
M3	Fuse	120151	15 Amp.
A6, A7	Dual Trimmer	7244434	Osc. Adj. RF Adj.
A8	Trimmer	7256905	Ant. Adj.
	Dial Pointer	7256861	Assembly

CHASSIS—BOTTOM VIEW



BUICK MODEL 980782



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SK7	0V	0V	.7VDC	-.1VDC	.7VDC	70VDC	6VDC	150VDC
V 2	6SA7	0V	6VDC	235VDC	70VDC	1-7.4VDC	0V	0V	-.3VDC
V 3	6SK7	0V	6VDC	0V	-.3VDC	0V	70VDC	0V	220VDC
V 4	6SR7	0V	1VDC	12VDC	-.2VDC	1.8VDC	1.8VDC	6VDC	0V
V 5	6V6GT	0V	6VDC	240VDC	235VDC	0V	0V	0V	15VDC
V 6	6V6GT	0V	6VDC	240VDC	236VDC	0V	0V	0V	15VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SK7	0Ω	0Ω	100Ω	4 Meg.	100Ω	*19KΩ	.5Ω	*19KΩ
V 2	6SA7	0Ω	.5Ω	*1800Ω	*19KΩ	20KΩ	.5Ω	0Ω	2 Meg.
V 3	6SK7	0Ω	.5Ω	0Ω	1.5 Meg	0Ω	*19KΩ	0Ω	*1800Ω
V 4	6SR7	0Ω	1 Meg.	3.3KΩ	1 Meg.	330KΩ	*20KΩ	.5Ω	5Ω
V 5	6V6GT	Inf.	.5Ω	*200Ω	*1900Ω	900 Ω	Inf.	0Ω	330Ω
V 6	6V6GT	Inf.	.5Ω	*190Ω	*190Ω	100Ω	Inf.	0Ω	330Ω

* Measured from junction of C1A and R 18

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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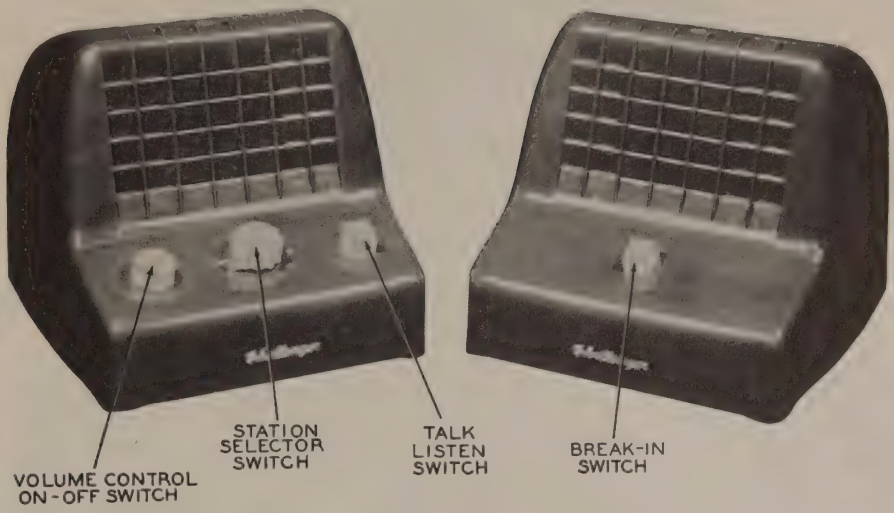
4910-6

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

CHALLENGER MODELS
60R, 600



TRADE NAME	Challenger, Models 60R (Remote), 600 (Master)
MANUFACTURER	Challenger Amplifier Co., 663 Broadway, New York 12, New York
TYPE SET	AC-DC Operated Inter Communication System
TUBES (THREE)	Types 14F7 AF Amp., 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-DC RATING .25 Amp. @ 117 Volts AC

SINGLE MASTER SYSTEM

CONNECTIONS:

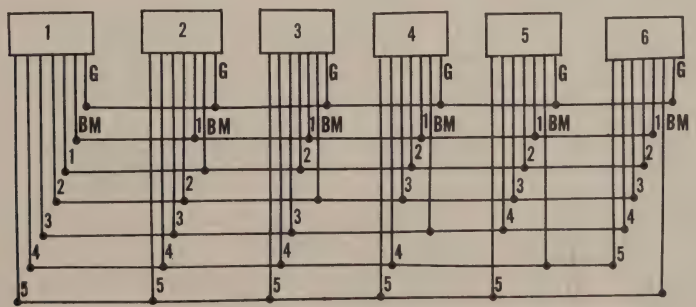
Using a three wire cable connect all the remote 60R units so that their "G" leads connect to "G" on the master unit and their "BR" leads connect to "BR" on the master unit. Then the remaining wire from each remote unit connects to its own selective lead numbered 1, 2, 3, etc. on the master unit. (See Schematic).

MULTIPLE MASTER SYSTEM

CONNECTIONS:

In order to operate this system it will be necessary to modify each master unit slightly. To modify the unit remove the chassis from the cabinet and cut the two wires coming thru the chassis near the TALK-LISTEN switch. These wires are marked with an "X" on the schematic. Tape the ends of the leads cut and replace the chassis in the cabinet.

All stations are connected to form a single system with a multi-wire cable. The number of wires in the cable must be one more than the number of master stations used. Up to six master stations may be connected in one system. See diagram below for connections from master stations to cable.



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PARTS LIST AND DESCRIPTIONS

CHALLENGER MODEL 60R

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CHALLENGER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	AF Amp.	14F7	14F7	8AC	
V2	Power Output	50L6GT	50L6GT	7AC	
V3	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CHALLENGER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150		AF8440	UP43215		DY-403020 -150	EL-224	■ Filter ▲ Filter
B	30	150							Filter
C	10	150							
C2	.1	400		P488-1	GT4P1		ST-4-1	TM-1	Line Isolation
C3	500	500		1469-0005	5R5T5		MOS.5-35	MS-35	Audio Coupling
C4	.003	600		P688-003	GT6D3	GP2M-003	ST-6-003	TM-23	" "
C5	.006	600		P688-006	GT6D6		ST-6-006	TM-26	Output Plate Bypass

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CHALLENGER PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	25Ω	1		W-25	43S-25	Volume control
B	Switch			51	Not Req.	Attach to R1A Per Instructions

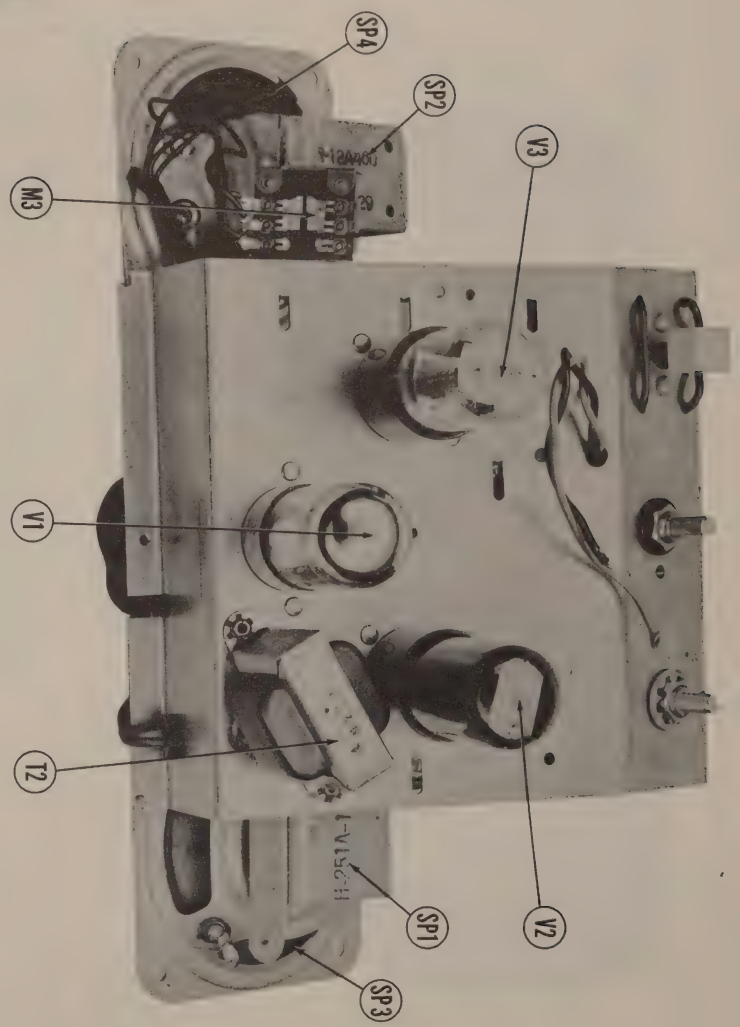
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CHALLENGER PART No.	IRC PART No.	IDENTIFICATION CODES
R2	47Ω	½		BW-½-47	Yl.-Vl.-Blk. Line Isolation
R3	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AF Grid
R4	3300Ω	½		BTS-3300	Or.-Or.-Red AF Cathode
R5	220KΩ	½		BTS-220K	Red-Red-Yl. AF Plate
R6	470KΩ	½		BTS-470K	Yl.-Vl.-Yl. 2nd AF Grid
R7	3300Ω	½		BTS-3300	Or.-Or.-Red 2nd AF Cathode
R8	100KΩ	½		BTS-100K	Br.-Blk.-Yl. 2nd AF Plate
R9	220KΩ	½		BTS-220K	Red-Red-Yl. Output Grid
R10	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
R11	3300Ω	½		BTS-3300	Or.-Or.-Red Filter
R12	220Ω	½		BW-½-220	Red-Red-Br. Filter
R13	270Ω	2		BW-2-270	Red-Vl.-Br. Line Dropping
R14	270Ω	2		BW-2-270	Red-Vl.-Br. Line Dropping
R15	10Ω	½		BW-½-10	Br.-Blk.-Blk. Series Vol. Control
R16	4.7Ω	½		BW-½-4.7	Yl.-Vl.-Gold Output Trans. Shunt

TRANSFORMER (INPUT)

ITEM No.	RATING: TURNS RATIO PRI. to SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: CHALLENGER PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	INSTALLATION NOTES
T1	1 TO 55	.95Ω	1350Ω	T-192-2	A-4744			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CHALLENGER PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	2000Ω	3.3Ω	36Ω	.4Ω	T-270-1	A-3876	RO-2	A-2928	

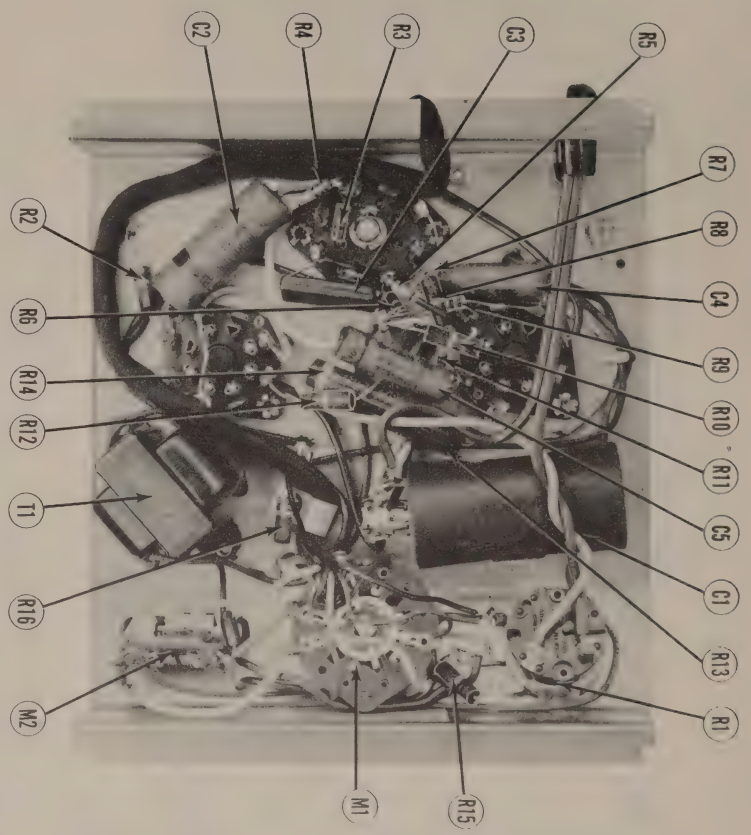
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CHALLENGER PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.				
SP1	PM	3.3Ω		ST-113 MOD. P4-X		Master unit.
SP2	PM	3.3Ω		ST-113 MOD. P4-X		Remote unit.
	CONE DIA.	V. C. DIA.				
SP3	3 3/8"	9/16"				
SP4	3 3/8"	9/16"				

MISCELLANEOUS

ITEM No.	PART NAME	CHALLENGER PART No.	NOTES
M1	Switch		Station Selector
M2	Switch		Talk-Listen
M3	Switch		Break In (Remote)

CHASSIS—BOTTOM VIEW



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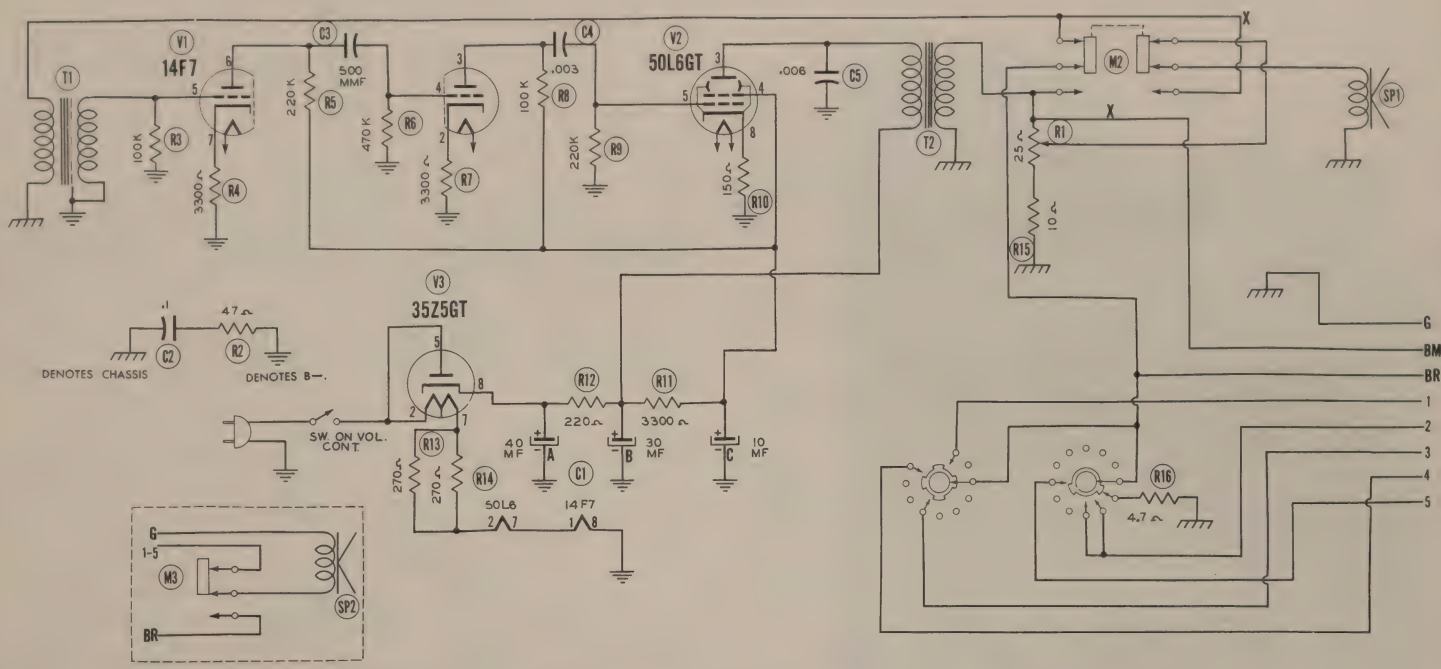
CHALLENGER MODEL 60R

CHALLENGER MODEL 60R



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	14F7	12VAC	1VDC	75VDC	CV	0V	50VDC	.6VDC	0V
V 2	50L6GT	CV	60VAC	125VDC	112VDC	0V	0V	12VAC	.6VDC
V 3	35Z5GT	CV	117VAC	108VAC	0V	117VAC	0V	80VAC	130VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	14F7	14Ω	3KΩ	* 100KΩ	470KΩ	1200Ω	* 220KΩ	3KΩ	0Ω
V 2	50L6GT	INF.	68Ω	* 260Ω	* 3.5KΩ	2.0KΩ	220KΩ	14Ω	150Ω
V 3	35Z5GT	INF.	250Ω	230Ω	INF.	2.0Ω	INF.	200Ω	60KΩ

* Measured from pin 8 of V3

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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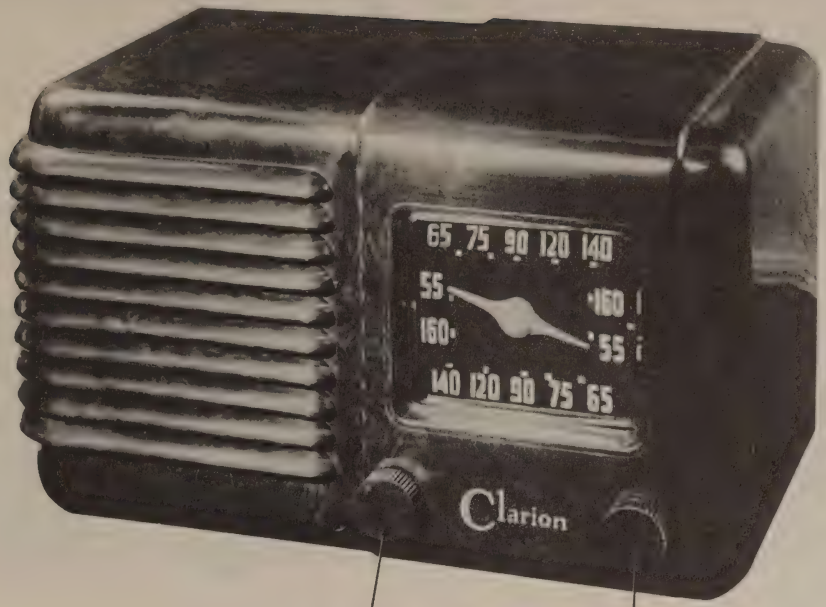
4910-7

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

CLARION MODELS
13201, 13203



CLARION MODELS
13201, 13203

CLARION MODEL 13201

TRADE NAME	Clarion, Models 13201, 13203
MANUFACTURER	Warwick MFG. Corp., 4640 W. Harrison St., Chicago 44, Illinois.
TYPE SET	Battery Operated Portable Superheterodyne Receiver.
TUBES (Four)	Types 1A7GT Converter, 1N5GT IF Amp., 1H5GT Det.-AVC-AF, 3Q5GT Power Output.
POWER SUPPLY RATING	1.5 Volts "A" Supply and 90 Volts "B" Supply In Pack Form. 235 MA @ 1.5 Volts DC and 13MA @ 1.5 Volts DC
TUNING RANGE—BROADCAST	530-1725KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap fully closed and set pointer parallel with base of dial. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1MFD	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning Cap. Fully open.	Across Voice Coil	A1, A2 A3, A4	Adjust for maximum output.
2	250MMF	High side to ext. ant. terminal. Low side to chassis.	1725KC	"	"	A5	"
3	250MMF	"	1500KC	Tune for Max. signal	"	A6	"

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PARTS LIST AND DESCRIPTIONS

CLARION MODEL 1320I

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CLARION PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	1A7GT	1A7GT	7Z	
2	IF. Amp.	1N5GT	1N5GT	5Y	
3	Det.-AVC-AF	1H5GT	1H5GT	5Z	
4	Power Output	3Q5GT	3Q5GT	7AF	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CLARION PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	4	150	A16-273	PRS150/4	BR415		M-4-150	UT-41	RF Bypass
C2	5		A83-355						RF Coupling
C3	.05	200	A16-152	P288-05	GT2S5		ST-4-05	TM-15	AVC Filter
C4	.05	200	A16-152	P288-05	GT2S5		"	"	RF Bypass
C5	50	500	A15-175	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	Osc. Grid Cap.
C6	.02	600	A16-150	P688-02	GT6S2		ST-6-02	TM-12	Conv. Screen Bypass
C7	.02	600	A16-150	P688-02	GT6S2		"	"	IF Grid Filter
C8	250	500	A15-176	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	Diode Filter
C9	.005	600	A16-153	1467-005	GT6D5	GP2M-005	ST-6-005	TM-25	Audio Coupling
C10	250	500	A15-176	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	AF Plate Bypass
C11	.01	200	A16-156	P488-01	GT2S1	GP2-335-01	ST-4-01	TM-11	Audio Coupling
C12	.002	600	A16-155	P688-002	GT6D2		ST-6-002	TM-22	Output Plate Bypass

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CLARION PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1Meg	½	A24-170	D13-133	AM-63-2	Volume Control
B	Shaft		Not Req.	E	Kss-3	Attach to R1A Per Instructions
C	Switch		"	42	SW-A2	" " " " "

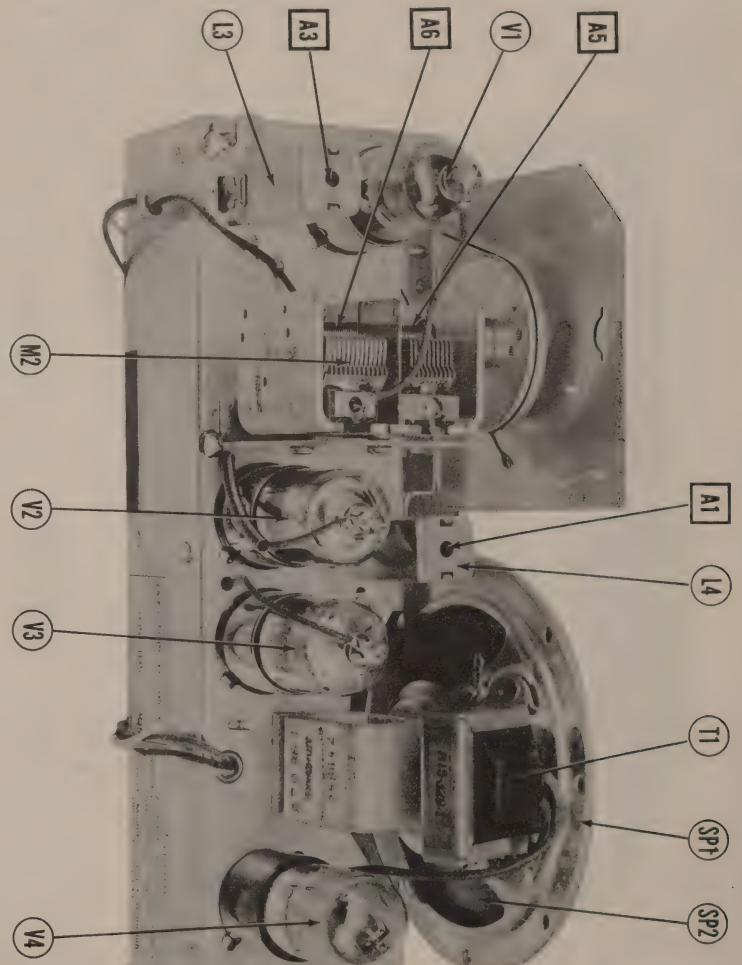
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CLARION PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES	
R2	220KΩ	½	A60-667	BTS-220K	Red-Red-Yl	Osc. Grid
3	47KΩ	½	A60-685	BTS-47K	Yl-Vi-or.	Osc. Anode
4	2.2Meg.	½	A60-684	BTS-2.2 Meg.	Red-Red-Grn.	IF Grid
5	2.2Meg.	½	A60-684	BTS-2.2 Meg.	Red-Red-Grn.	AVC Network
6	10Meg.	½	A60-663	BTS-10 Meg.	Br-Blk-Blue	AF. Grid
7	470KΩ	½	A60-662	BTS-470K	Yl-Vi-Yl.	AF. Plate
8	1Meg.	½	A60-668	BTS-1 Meg.	Br.-Blk-Grn.	Output Grid
9	390Ω	½	A60-665	BTA-390	Or.-White-Br.	Bias Network

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: CLARION PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
T1	8000Ω	3.2Ω	320Ω	.4Ω	B80-232	A-3329 #	RO-301	A-2931	# Drill One New Mounting Hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA CLARION PART No.	REPLACEMENT DATA MEISSNER PART No.	
L1A	Ant. Coil	60Ω	6Ω	A10-485		Used in YX132 Series
L1B	Ant. Coil			A10-414		Used in X132 Series
L2A	Osc. Coil	1.8Ω	5Ω	A10-505	14-1060	Used in YX132 Series
L2B	Osc. Coil			A10-415		Used in X132 Series
3	Input IF	24Ω	24Ω	A10-506	16-6668	
4	Input IF	24Ω	24Ω	A10-506	16-6669	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA CLARION PART No.	REPLACEMENT DATA JENSEN PART No.	REPLACEMENT DATA QUAM PART No.	INSTALLATION NOTES
	FIELD	V.C. IMP.				
SP1	PM	3.2Ω	B79-352	ST-107* P5-V	5A07	* Drill and tap magnet frame. Remount output transformer.
	CONE DIA.	V.C. DIA				
SP2	4 1/2"	9/16"				

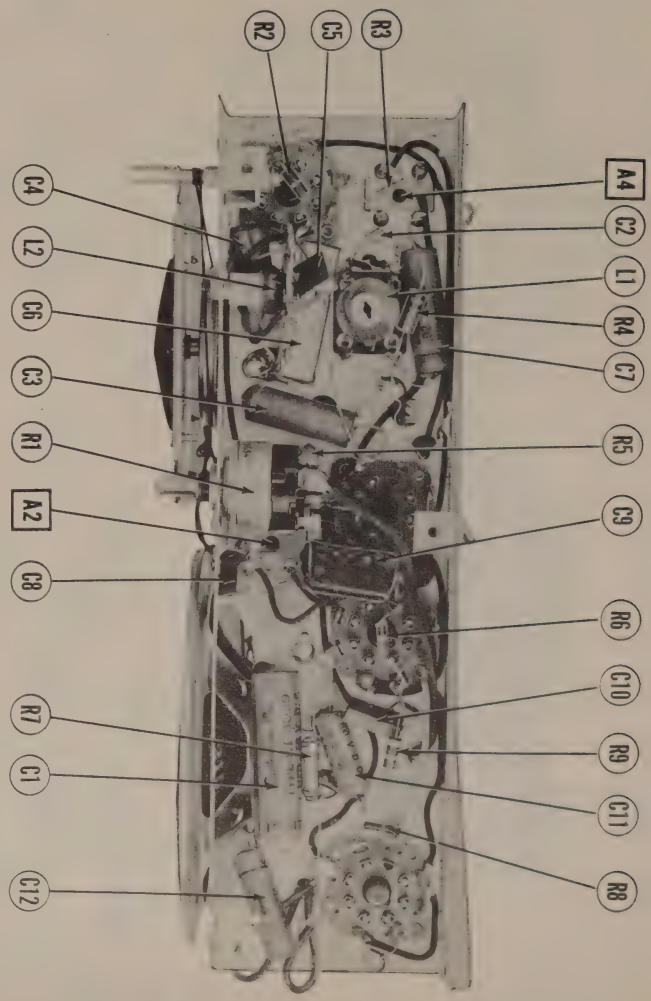
BATTERIES

ITEM No.	VOLTAGE	CLARION PART No.	REPLACEMENT DATA EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
M1	1.5V"A" 90V "B"				758			17GD60	

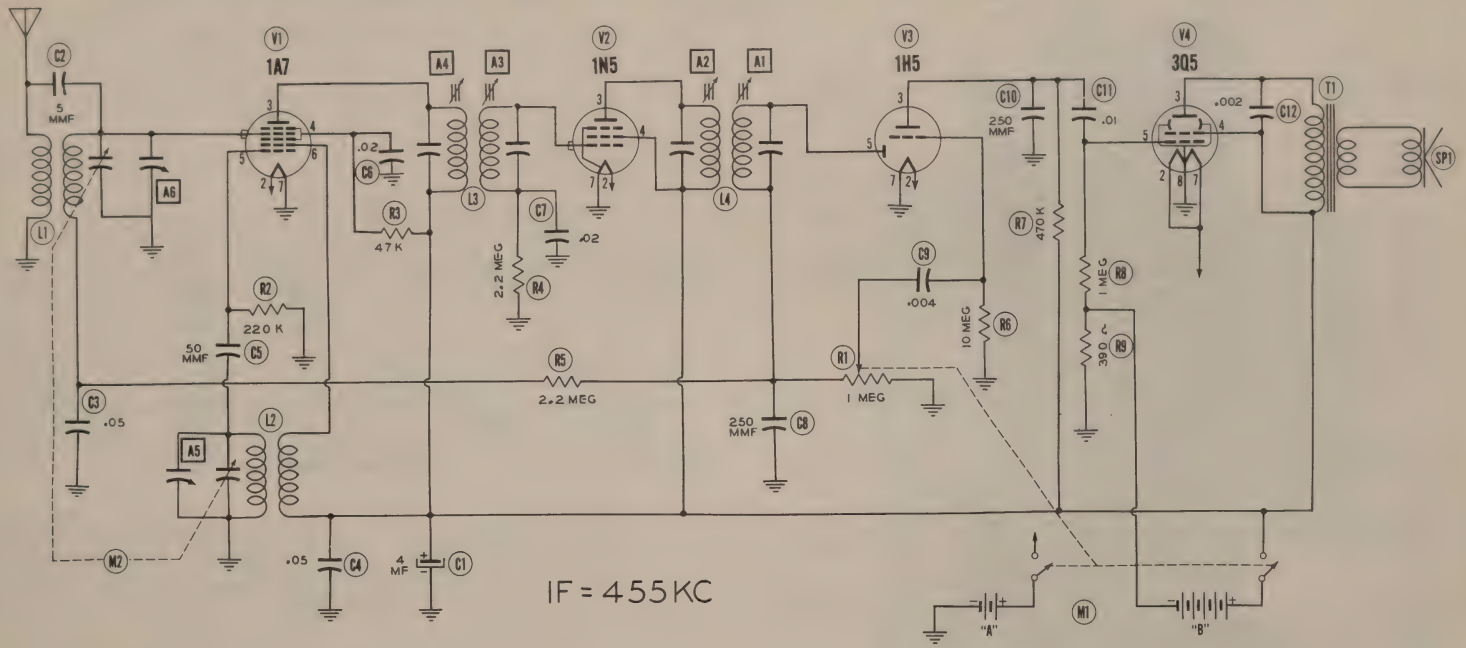
MISCELLANEOUS

ITEM No.	PART NAME	CLARION PART No.	NOTES
M2A	2 Gang Var. Cap.	B19-188	(29-477MMF, 39-244MMF)
M2B	2 Gang Var. Cap.	B19-185	Used in X132 Series
	Dial Scale	B67-515	
	Dial Crystal	48-21	
	Dial Pointer	58-31	
	Cabinet	A42-436	Ivory Plastic
	"	D42-431	Walnut "
	"	D42-437	Walnut Wood
	Knob	A62-245	Walnut

CHASSIS—BOTTOM VIEW



CLARION MODEL 1520



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	TOP CAP
V 1	1A7	0V	1.5VDC	67VDC	50VDC	§-.5VDC	90VDC	0V	0V	0V
V 2	1N5	0V	1.5VDC	87VDC	90VDC	0V	0V	0V	0V	0V
V 3	1H5	0V	1.5VDC	67VDC	0V	-.2VDC	0V	0V	0V	0V
V 4	3Q5	0V	1.5VDC	85VDC	90VDC	-1.2VDC	-5VDC	1.5VDC	0V	

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	TOP CAP
V 1	1A7	0Ω	†	*24Ω	*47KΩ	270KΩ	*1.8Ω	†	0Ω	3.2Meg.
V 2	1N5	0Ω	†	*24Ω	*0Ω	3.5Meg.	INF.	†	0Ω	2.2Meg.
V 3	1H5	0Ω	†	*70KΩ	INF.	1Meg.	10Meg.	†	0Ω	10Meg.
V 4	3Q5	0Ω	†	*320Ω	*0Ω	1Meg.	3.0Ω	†	0Ω	

* Measured from B+ point on switch.
† Do not measure.

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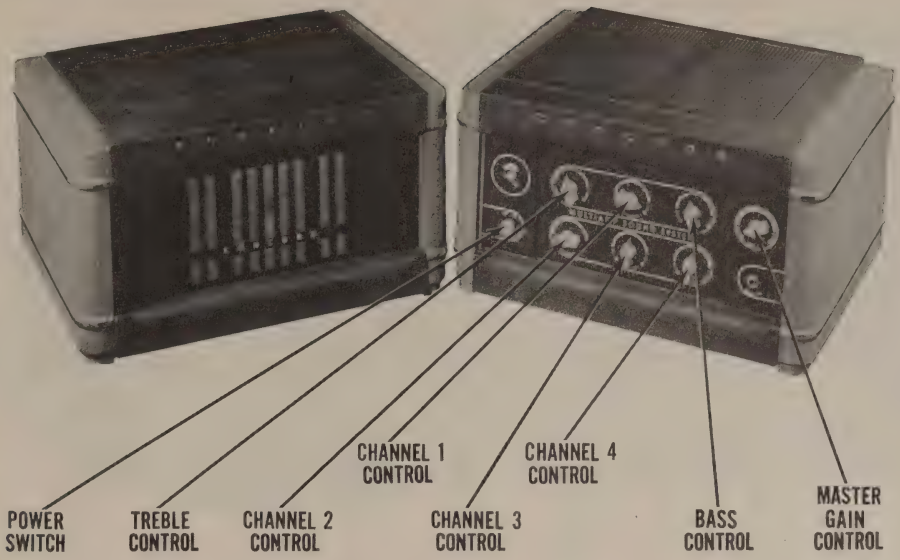
4910-8

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

CONCORD MODELS 2-200, 2-201, 2-218, 2-219, 2-232, 2-235, 2-236, 2-237, 2-238, 2-239, 2-240

CONCORD MODELS 2-200, 2-201, 2-218, 2-219, 2-232, 2-235, 2-236, 2-237, 2-238, 2-239, 2-240



CONCORD MODELS 2-200, 2-201, 2-218, 2-219, 2-232, 2-235, 2-236, 2-237, 2-238, 2-239, 2-240

TRADE NAME Concord, Models 2-200, 2-201, 2-218, 2-219, 2-232, 2-235, 2-236, 2-237, 2-238, 2-239, 2-240

MANUFACTURER Concord Radio Corp., 901 W. Jackson Blvd., Chicago 7, Illinois

TYPE SET AC Operated Plug-In Multi-Amp. Audio Amplifier Systems

TUBES(NINETEEN MAXIMUM USED IN MODEL 2-219) Types 6SQ7 Mic. 1 Amp., 6SQ7 Mic. 2 Amp., 6SQ7 Mic. 3 Amp., 6SL7 AF Amp., 6J5 Driver, (4) 6V6GT Power Output, (2) 7Z4 Rectifier, (6) 6V6GT Power Output, 5Z4 Rectifier

POWER SUPPLY 100-127 Volts AC RATING 2.68Amp. @ 117 Volts AC

MODEL BREAKDOWN

MODEL	CONSISTS OF
2-200	1 Model 2-240, 1 Model 2-237
2-201	1 Model 2-240, 1 Model 2-238
2-218	1 Model 2-240, 2 Models 2-237
2-219	1 Model 2-240, 1 Model 2-237, 1 Model 2-238
2-232	1 Model 2-240, 2 Models 2-238
2-235	1 Model 2-237, 1 Model 2-239
2-236	1 Model 2-238, 1 Model 2-239
2-237	6 Tube Power Amplifier
2-238	8 Tube Power Amplifier
2-239	Impedence Matching Chassis
2-240	5 Channel Audio Pre Amp.

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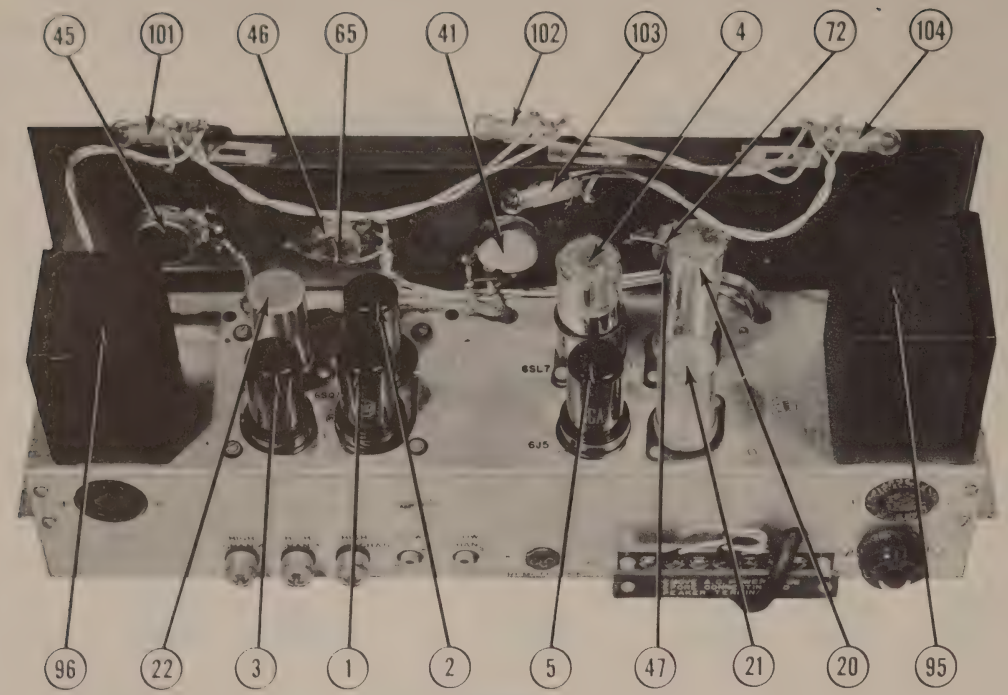
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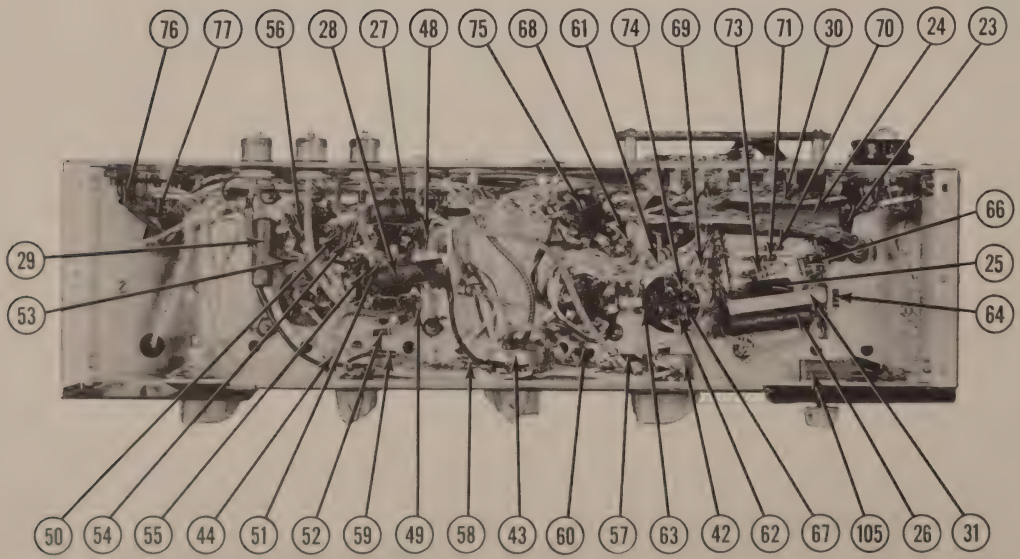
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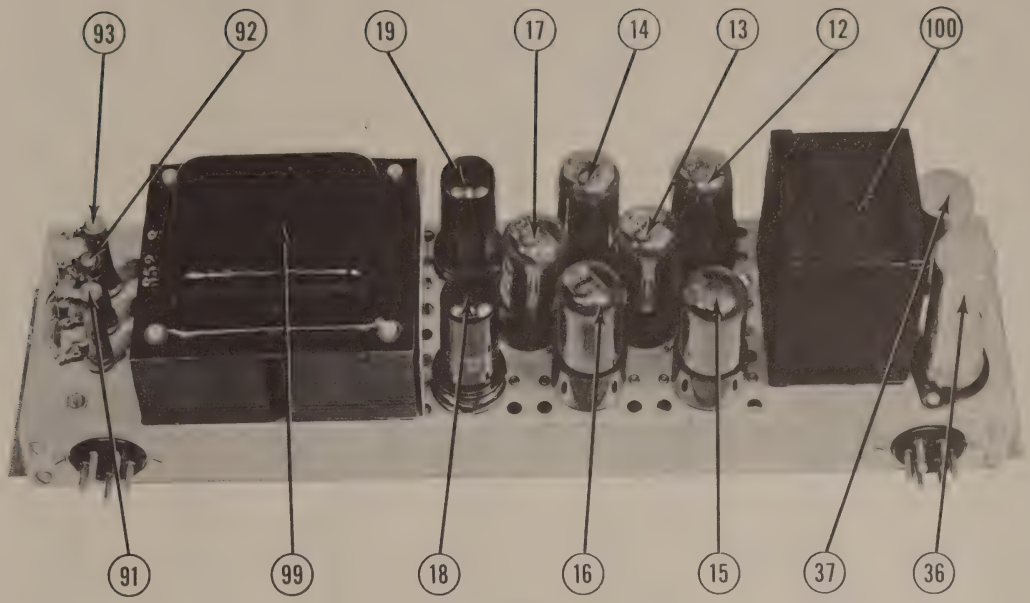
2-240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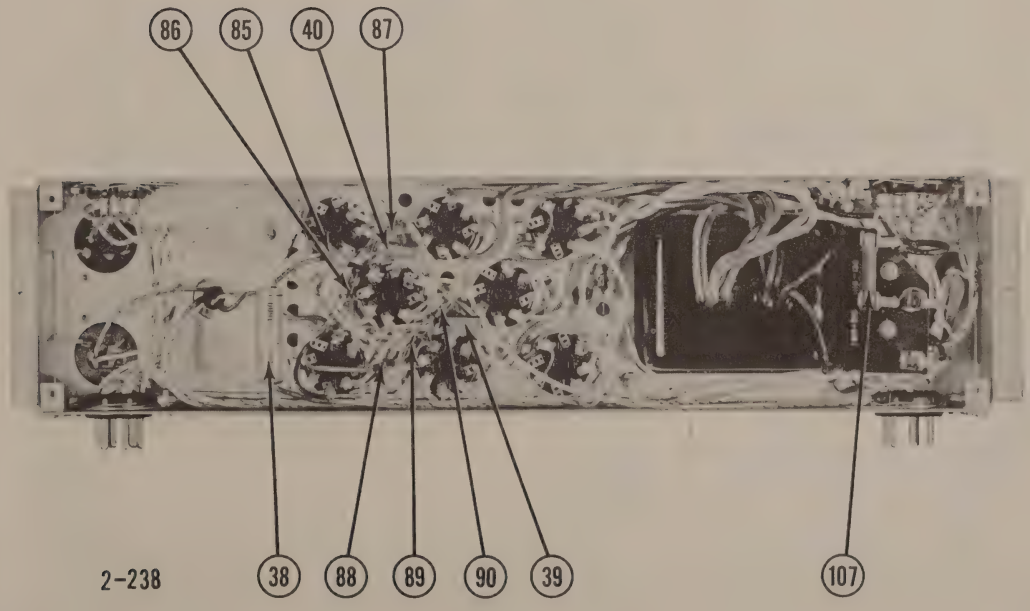
2-238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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CONCORD PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
1	Mic. #1 Amp.		6SQ7	8Q	Model 2-240
2	Mic. #2 Amp.		6SQ7	8Q	" 2-240
3	Mic. #3 Amp.		6SQ7	8Q	" 2-240
4	AF Amp.		6SL7	8ED	" 2-240
5	Driver		6J5	6Q	" 2-240
6	Power Output		6V6GT	7AC	Model 2-237
7	Power Output		6V6GT	7AC	" 2-237
8	Power Output		6V6GT	7AC	" 2-237
9	Power Output		6V6GT	7AC	" 2-237
10	Rectifier		7Z4	5AB	" 2-237
11	Rectifier		7Z4	5AB	" 2-237
12	Power Output		6V6GT	7AC	Model 2-238
13	Power Output		6V6GT	7AC	" 2-238
14	Power Output		6V6GT	7AC	" 2-238
15	Power Output		6V6GT	7AC	" 2-238
16	Power Output		6V6GT	7AC	" 2-238
17	Power Output		6V6GT	7AC	" 2-238
18	Rectifier		5Z4	5L	" 2-238
19	Rectifier		5Z4	5L	" 2-238

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CONCORD PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
20A	10	450		AF222J	UP11145		DY-3x10-450	EL-310	■ Decoupling
B	10	450							▲ " "
C	10	450							
21A	20	25		AF44D	UP222-45†		DY-2x20-25	EL-325†	■ Cathode Bypass
B	20	25							▲ " "
22A	20	25		AF444D	UP222-25		DY-3x20-25	EL-325	■ " "
B	20	25							▲ " "
C	20	25							
23	.004	400		484-004	DT6D4		ST-6-004	TC-24	Tone Comp.
24	.1	600		684-1	DT6P1		ST-6-1	TC-1	Audio Coupling
25	.004	400		484-004	DT6D4		ST-6-004	TC-24	Tone Compensation
26	.05	600		684-05	DT6S5		ST-6-05	TC-15	Audio Coupling
27	.01	600		684-01	DT6S1	GP2-335-01	ST-6-01	TC-11	" "
28	.01	600		684-01	DT6S1	GP2-335-01	ST-6-01	TC-11	" "
29	.01	600		684-01	DT6S1	GP2-335-01	ST-6-01	TC-11	" "
30	750	300		1467-00075	1W5T7	GP2K-750	MO.3-37	1FM-37	Tone Compensation
31	750	300		1467-00075	1W5T7	GP2K-750	MO.3-37	1FM-37	" "
32	.01	600		684-01	DT6S1	GP2-335-01	ST-6-01	TC-11	Hash Filter Note
33	40	450		AF8J	UP4045		DY-40-450	EL-4	Filter
34A	10	450		AF2J	UP1045		DY-10-450/25-50	EL-1	■ Filter
B	25	50		PRS50/25	BR205			TA525	▲ Cathode Bypass
35	.002	1600		1684-002	MD16D2		STM-16-002	TR-22	Output Plate Bypass
36	40	450		AF8J	UP4045		DY-40-450	EL-4	Filter
37A	10	450		AF22J4A†	UP1045C		DY-10-450/25-50	EL-202†	■ Filter
B	20	25							▲ Cathode Bypass
38	.002	1600		1684-002	MD16D2		STM-16-002	TR-22	Output Plate Bypass
39	250	500		1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	Output Grid Bypass
40	250	500		1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	" " "

† Omit one section.
Note. Not used in all models.
Items 20 thru 32 used in model 2-240
" 33 " 35 used in model 2-237
" 36 " 40 used in model 2-238

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (IMPEDANCE MATCHING)

ITEM No.	RATING: IMPEDANCE	RATING: DC RES.	REPLACEMENT DATA: CONCORD PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	INSTALLATION NOTES
94	4Ω 5.3Ω 8Ω 16Ω 250Ω 600Ω	.6Ω .65Ω .7Ω 1.2Ω 10Ω 17Ω		A-3838 #			# Drill new mounting holes. Used in model 2-239.

TRANSFORMER (IMPEDANCE MATCHING)

ITEM No.	RATING: IMPEDANCE	RATING: DC RES.	REPLACEMENT DATA: CONCORD PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	INSTALLATION NOTES
95	4Ω 5.3Ω 8Ω 16Ω 250Ω 600Ω	.6Ω .65Ω .7Ω 1.2Ω 10Ω 17Ω		A-3838#			# Drill new mounting holes. Used in model 2-240.

TRANSFORMER (DRIVER)

ITEM No.	RATING: TURNS RATIO PRI. to ½ SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: CONCORD PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	INSTALLATION NOTES
96	2.6 to 1	1800Ω	800Ω CT		A-4401#		A-3124#	# Drill new mounting holes. Used in model 2-240.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: CONCORD PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
97	117VAC @ 1.1A	800VCT @ .15 ADC	6.3VAC @ 1.8A	6.4VCT @ 4.0A				

Used in model 2-237

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: CONCORD PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	INSTALLATION NOTES
98	2500Ω CT	8Ω 16Ω	110Ω CT	.4Ω .6Ω					Used in model 2-237.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: CONCORD PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
99	117VAC @ 1.5A	760VCT @ .19 ADC	5.0VAC @ 4.0A	6.3VCT @ 4.6A		P-6165		

Used in model 2-238.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: CONCORD PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	INSTALLATION NOTES
100	3100Ω CT	8Ω 16Ω	120Ω CT	.4Ω .6Ω					Used in model 2-238.

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	CONCORD PART No.	IRC PART No.	CLAROSTAT PART No.	
41A	500KΩ	½		D13-133	M-60-Z	Channel 1 control
B	Shaft			A	Not Req.	Attach to 41A Per Instructions
42A	500KΩ	½		D13-133	M-60-Z	Channel 2 control
B	Shaft			A	Not Req.	Attach to 42A Per Instructions
43A	500KΩ	½		D13-133	M-60-Z	Channel 3 control
B	Shaft			A	Not Req.	Attach to 43A Per Instructions
44A	500KΩ	½		D13-133	M-60-Z	Channel 4 control
B	Shaft			A	Not Req.	Attach to 44A Per Instructions
45A	500KΩ	½		D13-133	M-60-Z	Master Gain control
B	Shaft			A	Not Req.	Attach to 45A Per Instructions
46	4 Meg.	½				Bass control
47	4 Meg	½				Treble control

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	CONCORD PART No.	IRC PART No.		
48	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn.	1st Mic. Amp. Grid
49	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn.	2nd Mic. Amp. Grid
50	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn.	3rd Mic. Amp. Grid
51	3300Ω	½		BTS-3300	Or.-Or.-Red	1st Mic. Amp. Cathode
52	3300Ω	½		BTS-3300	Or.-Or.-Red	2nd Mic. Amp. Cathode
53	3300Ω	½		BTS-3300	Or.-Or.-Red	3rd Mic. Amp. Cathode
54	270KΩ	½		BTS-270K	Red-Vi.-Yl.	1st Mic. Amp. Plate Load
55	270KΩ	½		BTS-270K	Red-Vi.-Yl.	2nd Mic. Amp. Plate Load
56	270KΩ	½		BTS-270K	Red-Vi.-Yl.	3rd Mic. Amp. Plate Load
57	500KΩ	½		BTS-470K	Grn.-Blk.-Yl.	Isolation
58	500KΩ	½		BTS-470K	Grn.-Blk.-Yl.	"
59	500KΩ	½		BTS-470K	Grn.-Blk.-Yl.	"
60	500KΩ	½		BTS-470K	Grn.-Blk.-Yl.	"
61	2700Ω	½		BTS-2700	Red-Vi.-Red	1st AF Cathode
62	150KΩ	½		BTS-150K	Br.-Grn.-Yl.	1st AF Plate Load
63	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn.	Bias
64	390KΩ	½		BTS-390K	Or.-White-Yl.	Tone Comp.
65	500KΩ	½		BTS-470K	Grn.-Blk.-Yl.	" "
66	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	" "
67	27KΩ	½		BTS-27K	Red-Vi.-Or.	Decoupling
68	2700Ω	½		BTS-2700	Red-Vi.-Red	2nd AF Cathode
69	150KΩ	½		BTS-150K	Br.-Grn.-Yl.	2nd AF Plate Load
70	220KΩ	½		BTS-220K	Red-Red-Yl.	Tone Comp.
71	56KΩ	½		BTS-56K	Grn.-Blue-Or.	" "
72	500KΩ	½		BTS-470K	Grn.-Blk.-Yl.	" "
73	2700Ω	½		BTS-2700	Red-Vi.-Red	Driver Cathode
74	10KΩ	1		BTA-10K	Br.-Blk.-Or.	Decoupling
75	10KΩ	1		BTA-10K	Br.-Blk.-Or.	"
76	50KΩ	½		BTS-47K	Grn.-Blk.-Or.	Output Shunt
77	50KΩ	½		BTS-47K	Grn.-Blk.-Or.	" "
78	680Ω	1		BTA-680	Blue-Gray-Br.	Parasitic Supp.
79	680Ω	1		BTA-680	Blue-Gray-Br.	" "
80	680Ω	1		BTA-680	Blue-Gray-Br.	" "
81	680Ω	1		BTA-680	Blue-Gray-Br.	" "
82	171Ω	5		ABA-200		Output Cathode See Note 1
83	50KΩ	2		BT-2-47K		Cathode Bias See Note 2
84	7500Ω	10		AB-7500		Filter
85	1300Ω	1		BTA-1200	Br.-Or.-Red	Parasitic Supp.
86	1200Ω	½		BTS-1200	Br.-Red-Red	" "
87	1200Ω	½		BTS-1200	Br.-Red-Red	" "
88	1200Ω	½		BTS-1200	Br.-Red-Red	" "
89	1200Ω	½		BTS-1200	Br.-Red-Red	" "
90	1200Ω	½		BTS-1200	Br.-Red-Red	" "
91	114Ω	10		ABA-150		Output Cathode See Note 3
92	30KΩ	10		DG-30K		Cathode Bias
93	5000Ω	10		AB-5000		Filter

Note 1. On IRC replacement set slider 171Ω from end.
Note 2. Some models use three 150KΩ ½ W. Resistor in parallel in this application.
Note 3. On IRC replacement set slider 114Ω from end.
Items 48 thru 77 used in model 2-240
" 78 " 84 used in model 2-237
" 85 " 93 used in model 2-238

PARTS LIST AND DESCRIPTIONS (Continued)

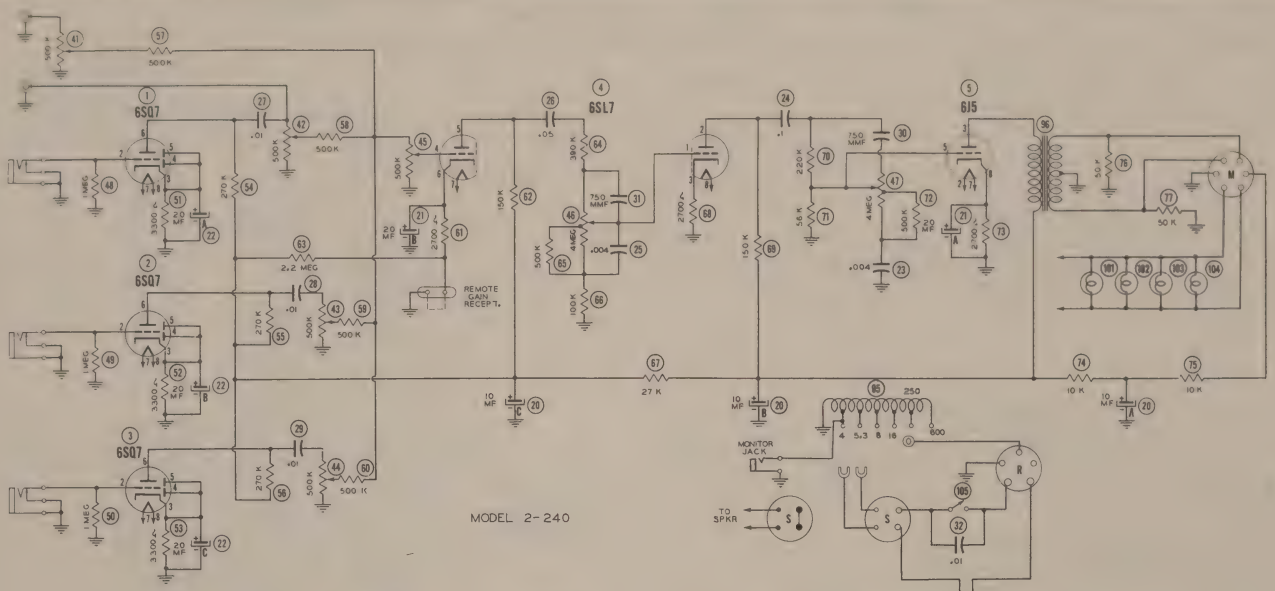
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					CONCORD PART No.		
101 to 104	Bayonet	7.5V	0.2A	Blue			Type #51 Used in 2-240

MISCELLANEOUS

ITEM No.	PART NAME	CONCORD PART No.	NOTES
105	Switch		Power (2-240)
106	Fuse		2 Amp. (2-237)
107	Fuse		3 Amp. (2-238)
	Cabinet	CT	
	Top	2-202	Phono Player
	Top	2-203	Record Changer

CONCORD MODELS 2-200, 2-201, 2-218, 2-219, 2-232, 2-235, 2-236, 2-237, 2-238, 2-239, 2-240



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SQ7	0V	0V	1.3VDC	0V	0V	115VDC	3.2VAC	3.2VAC
2	6SQ7	0V	0V	1.3VDC	0V	0V	110VDC	3.2VAC	3.2VAC
3	6SQ7	0V	0V	1.3VDC	0V	0V	125VDC	3.2VAC	3.2VAC
4	6SL7	0V	165VDC	2.5VDC	0V	140VDC	1.9VDC	3.2VAC	3.2VAC
5	6J5	0V *	3.2VAC	280VDC	440VDC	0V	360VDC	3.2VAC	11VDC
6	6V6GT	0V	3.2VAC	440VDC	340VDC	0V	340VDC	3.2VAC	25VDC
7	6V6GT	0V	3.2VAC	440VDC	340VDC	0V	0V	3.2VAC	25VDC
8	6V6GT	0V	3.2VAC	440VDC	340VDC	0V	0V	3.2VAC	25VDC
9	6V6GT	0V	3.2VAC	440VDC	340VDC	0V	0V	3.2VAC	25VDC
10	724	*	0V	400VAC	0V	0V	400VAC	445VDC	*
11	724	*	0V	400VAC	0V	0V	400VAC	445VDC	*
12	6V6GT	0V	3.2VAC	440VDC	360VDC	0V	0V	3.2VAC	27VDC
13	6V6GT	0V	3.2VAC	440VDC	360VDC	0V	0V	3.2VAC	27VDC
14	6V6GT	0V	3.2VAC	440VDC	360VDC	0V	0V	3.2VAC	27VDC
15	6V6GT	0V	3.2VAC	440VDC	360VDC	0V	0V	3.2VAC	27VDC
16	6V6GT	0V	3.2VAC	440VDC	360VDC	0V	0V	3.2VAC	27VDC
17	6V6GT	0V	3.2VAC	440VDC	360VDC	0V	0V	3.2VAC	27VDC
18	524	0V	445VDC	0V	380VAC	0V	380VAC	0V	445VDC
19	524	0V	445VDC	0V	380VAC	0V	380VAC	0V	445VDC

* 6.3VAC measured between pins #1 and #8 on tubes 10-11.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SQ7	0Ω	1 Meg.	3.3KΩ	0Ω	0Ω	360KΩ	.05Ω	.05Ω
2	6SQ7	0Ω	1 Meg.	3.3KΩ	0Ω	0Ω	360KΩ	.05Ω	.05Ω
3	6SQ7	0Ω	1 Meg.	3.3KΩ	0Ω	0Ω	360KΩ	.05Ω	.05Ω
4	6SL7	10MΩ	210KΩ	2.7KΩ	∞	240KΩ	2.7KΩ	.05Ω	.05Ω
5	6J5	∞	.05Ω	50KΩ	40KΩ	60KΩ	45KΩ	.05Ω	2.7KΩ
6	6V6GT	Inf.	.05Ω	45KΩ	40KΩ	1.4KΩ	40KΩ	.05Ω	171Ω
7	6V6GT	7MΩ	.05Ω	45KΩ	40KΩ	1.4KΩ	Inf.	.05Ω	171Ω
8	6V6GT	Inf.	.05Ω	45KΩ	40KΩ	1.4KΩ	Inf.	.05Ω	171Ω
9	6V6GT	65Ω	.05Ω	45KΩ	40KΩ	1.4KΩ	Inf.	.05Ω	171Ω
10	724	Inf.	Inf.	90Ω	Inf.	Inf.	90Ω	45KΩ	Inf.
11	724	Inf.	Inf.	11Ω	Inf.	0Ω	11Ω	45KΩ	Inf.
12	6V6GT	0Ω	.05Ω	30KΩ	25KΩ	2KΩ	Inf.	.05Ω	114Ω
13	6V6GT	0Ω	.05Ω	30KΩ	25KΩ	2KΩ	65Ω	.05Ω	114Ω
14	6V6GT	0Ω	.05Ω	30KΩ	25KΩ	2KΩ	Inf.	.05Ω	114Ω
15	6V6GT	0Ω	.05Ω	30KΩ	25KΩ	2KΩ	Inf.	.05Ω	114Ω
16	6V6GT	0Ω	.05Ω	30KΩ	25KΩ	2KΩ	700Ω	.05Ω	114Ω
17	6V6GT	0Ω	.05Ω	30KΩ	25KΩ	2KΩ	Inf.	.05Ω	114Ω
18	524	0Ω	30KΩ	Inf.	30Ω	Inf.	30Ω	Inf.	30KΩ
19	524	0Ω	30KΩ	Inf.	26Ω	Inf.	26Ω	Inf.	30KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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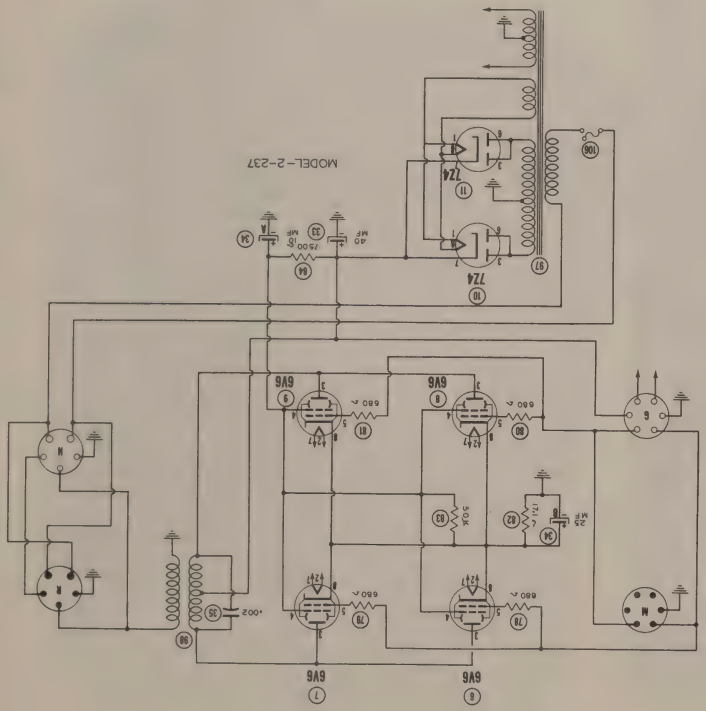
4910-9

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

4910-9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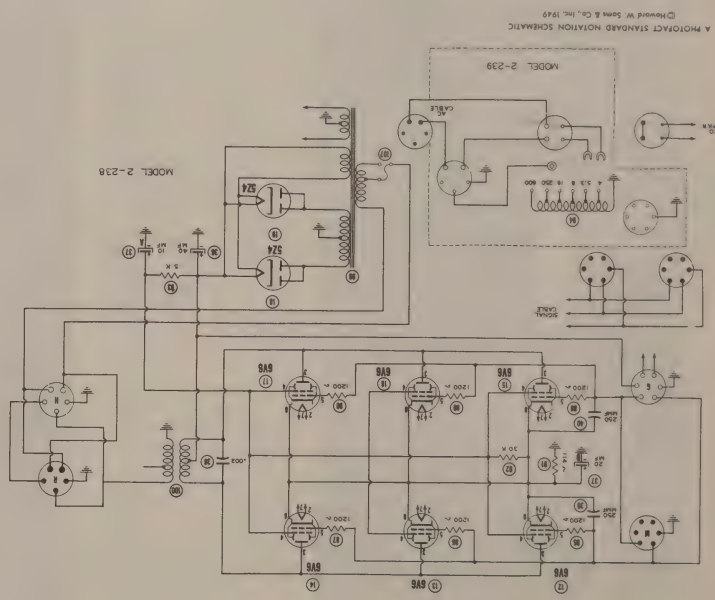
6V6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A PHOTOFACT STANDARD NOTATION SCHEMATIC
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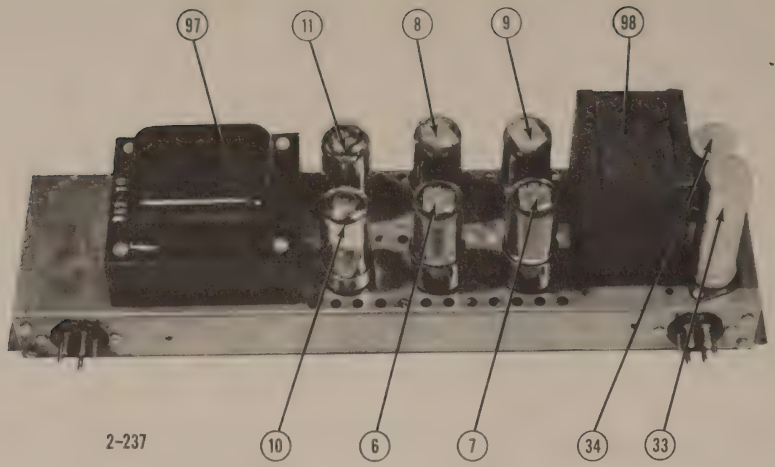

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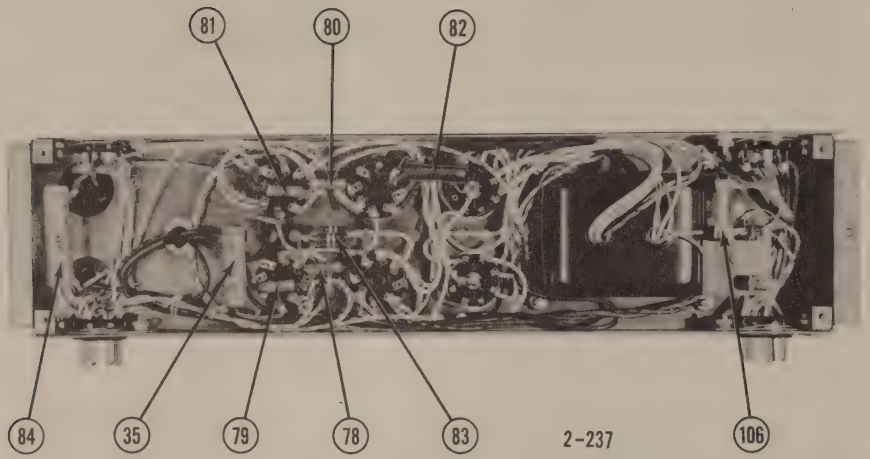

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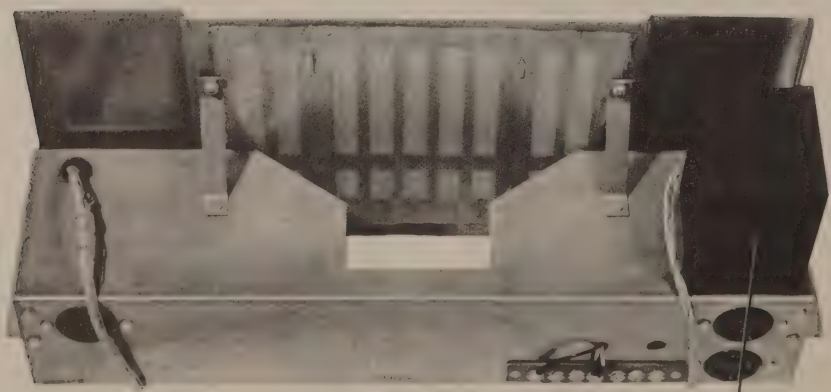

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CORONADO MODELS 94RA4-43-8129A,
94RA4-43-8130A,B 94RA4-43-8131A,B

CORONADO MODEL 94RA4-43-8130A

TRADE NAME	Coronado, Models 94RA4-43-8129A, 94RA4-43-8130A,B, 94RA4-43-8131A,B.
SUPPLIER	Gamble-Skogmo, Inc., 15 N. 8th St., Minneapolis, Minn.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna.
TUBES (Five)	Types 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det-AVC-AF, 50L6GT Power Output 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	535-1630KC RATING .28 Amp @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer, turn tuning capacitor fully closed and set right hand edge of dial pointer saddle 3/16" from the right hand edge of the dial backplate.

Use isolation transformer if available. If not connect a .1MFD cap. in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1MFD.	High side to front stator of tuning cap. Low side to B-	455KC		Tuning cap. fully open	Across Voice coil	A1,A2 A3,A4	Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001 MFD to reduce hum modulation.
2	"	"	1630KC		"	"	A5	Adjust for maximum output.
3		Loop	1400KC		Tune for Maximum Signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

C R N.I.C
MODEL 94RA4-43-9130A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12SA7	12SA7	8R	
V2	IF. Amp.	12SK7	12SK7	8N	
V3	Det.-AVC-AF.	12SQ7	12SQ7	8Q	
V4	Power Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CORONADO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	150	A18-280	PRSA150/30-30	EDL3315		DSB-2x30-150	TA-330	Red Filter
C1B	30	150	A18-272						Yellow Filter
C2	250	500	A15-176	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	RF Coupling Note
C3	.05	400	A16-158	P488-05	GT4S5		ST-4-05	72P1	Line Isolation
C4	.05	200	A16-152	P288-05	GT2S5		ST-4-05	TM-15	AVC Filter
C5	50	500	A15-175	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	Osc. Grid Cap.
C6	.02	600	A16-151	P688-02	GT6S2		ST-6-02	TM-12	Tuning Cap. Isolation
C7	.05	200	A16-152	P288-05	GT2S5		ST-4-05	TM-15	AVC Filter Note
C8	250	500	A15-176	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	Diode Filter
C9	.005	600	A16-153	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Audio Coupling
C10	250	500	A15-176	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	AF Plate Bypass
C11	.005	600	A16-153	P688-005	GT6D5	BP2M-005	ST-6-005	TM-25	Audio Coupling
C12	.005	600	A16-153	P688-005	GT6D5		ST-6-005	TM-25	Output Plate Bypass
C13	.05	400	A16-158	P488-05	GT4S5		ST-4-05	TM-15	Line Filter

Note. Used in UL approved models only.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CORONADO PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1Meg	½	A24-180	D13-137	AM-63-2	Volume Control
B	Shaft		Not req.	E	Kss-3	Attach to R1A per instr.
C	Switch		" "	41	SW-A	" " " " "

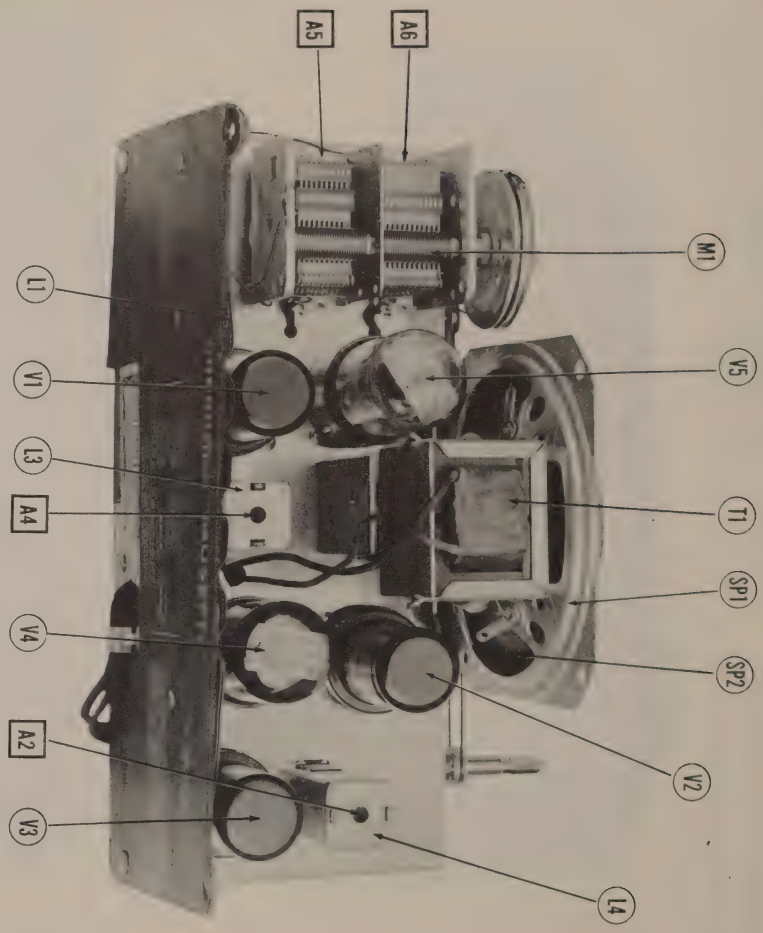
Note. Used in UL approved models only.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CORONADO PART No.	IRC PART No.	IDENTIFICATION CODES	
R2	470KΩ	½	A60-662	BTS-470K	Yl.-Vi.-Yl.	Line Isolation.
3	22KΩ	½	A60-659	BTS-22K	Red-Red-Or.	Osc.Grid
4	1 Meg.	½	A60-668	BTS-1 Meg.	Br.-Blk.-Grn.	AVC.Network See note
5	1 Meg.	½	A60-668	BTS-1 Meg.	Br.-Blk.-Grn.	AVC Network
6	47KΩ	½	A60-665	BTS-47K	Yl.-Vi.-Or.	Diode RF Filter
7	10Meg.	½	A60-663	BTS-10 Meg.	Br.-Blk.-Blue	AF Grid
8	470KΩ	½	A60-662	BTS-470K	Yl.-Vi.-Yl.	AF Plate
9	470KΩ	½	A60-662	BTS-470K	Yl.-Vi.-Yl.	Output Grid
10	120Ω	½	A60-702	BW-½-120	BR.-Red-Br.	Output Cathode
11	10KΩ	1	A60-698	BTA-10K	Br.-Blk.-Or.	Voltage Divider-Bleeder
12	1000Ω	1	A60-732	BTA-1000	Br.-Blk.-Red	Filter
13	27Ω	½	A60-690		Red-Vi.-Blk.	Rectifier Ballast

Note Used in UL Approved Models only.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CORONADO PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	18000Ω	3.3Ω	144Ω	.6Ω	Part of B79-369	A-3876†	RC-2 †	A-2928†	† Bend mtg. tabs down and mount on original bracket

SPEAKER

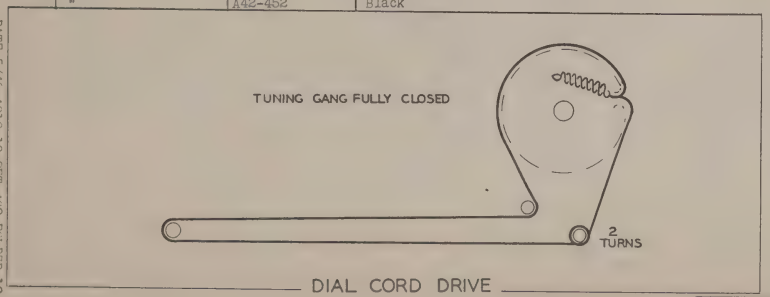
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CORONADO PART No.	JENSEN PART No.	QUAM PART No.	
SP1	FIELD	V. C. IMP.	B79-369	ST-113# MOD. P4-X	4A07#	# Remount output transformer. Mount on original bracket or fabricate new mounting bracket.
	PM	3.3Ω				
SP2	CONE DIA.	V. C. DIA.				
	3 7/8"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	CORONADO PART No.	MEISSNER PART No.	
L1A	Loop Ant.	2Ω		SD84-305		Used in non UL models
L1B	Loop Ant.			SD84-275		Used in UL approved models
L2	Osc. coil	5Ω		B10-480	14-1060	
L3	Input IF	20Ω	20Ω	A10-479	16-6678	
L4	Output IF	20Ω	20Ω	A10-479	16-6678	

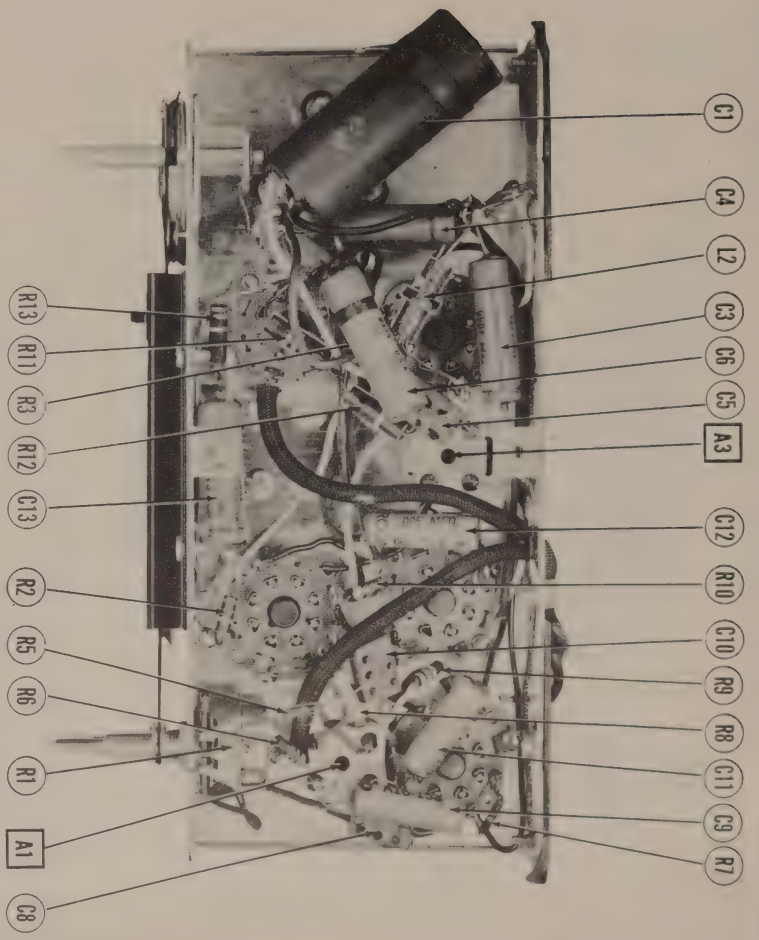
MISCELLANEOUS

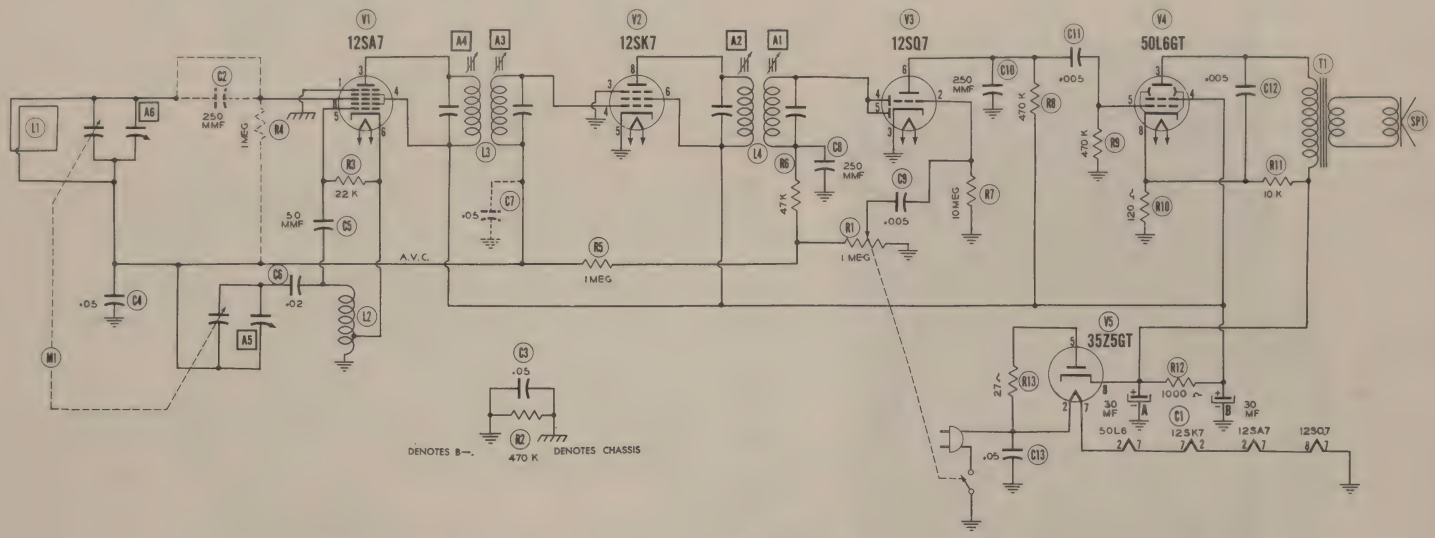
ITEM No.	PART NAME	CORONADO PART No.	NOTES
M1	2 Gang Var. Cap	B19-198	(32-432MMF. 30-205 MMF)
	Dial Pointer	A53-73	
	Knob	A52-282	Brown
	"	B52-281	White
	Cabinet	A42-453	Brown
	"	D42-450	White
	"	A42-452	Black



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





IF=455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	0V	24VAC	90VDC	90VDC	§-8VDC	0V	12VAC	-.5VDC
V 2	12SK7	0V	24VAC	0V	-.5VDC	0V	90VDC	36VAC	90VDC
V 3	12SQ7	0V	-.7VDC	0V	-.4VDC	-.4VDC	41VDC	0V	12VAC
V 4	50L6GT	0V	83VAC	115VDC	90VDC	0V	-.5VDC	36VAC	5.5V.C
V 5	35Z5GT	0V	117VAC	110VAC	0V	115VAC	5.5VDC	83VAC	120VAC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	400KΩ	24Ω	*1000Ω	*1000Ω	22KΩ	.5Ω	12Ω	2.5 Meg.
V 2	12SK7	400KΩ	24Ω	0Ω	2.5 Meg.	0Ω	*1000Ω	36Ω	*1000Ω
V 3	12SQ7	400KΩ	10 Meg.	0Ω	0Ω	1.4 Meg	*150KΩ	0Ω	12Ω
V 4	50L6GT	Inf.	80Ω	*140Ω	*1000Ω	450KΩ	2.5 Meg.	36Ω	120Ω
V 5	35Z5GT	Inf.	120Ω	115Ω	Inf.	150Ω	120Ω	80Ω	13KΩ

* Measured from pin 8 of V5

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4910-10

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DELCO
MODEL R-1241

DELCO
MODEL R-1241

DELCO MODEL R-1241

TRADE NAME Delco, Model R-1241
SUPPLIER United Motors Service, Div. of GMC, General Motors Bldg., Detroit, Michigan
TYPE SET AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop Antenna
TUBES (FIVE) Types 12BE6 Converter, 12BA6 IF Amp., 12AT6 DET.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier

POWER SUPPLY 105-125 Volts AC RATING .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST 550-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial.

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1MFD	High side to rear stator of tuning gang. Low side to B-.	456KC	Tuning Gang Fully Open	Across Voice coil	A1,A2, A3,A4	Adjust for maximun output. If isolation transformer is not used reduce dummy antenna to .001 MfD to reduce hum Modulation.
2	220MMF	"	1615KC	"	"	A5	Adjust for Maximum Output.
3	220MMF	High side to external antenna terminal. Low side to ground terminal.	1400KC	Tune for Max. signal	"	A6	"" " " "

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: DELCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	I.F. Amp.	12BA6	12BA6	7BK	
V3	DET.-AVC.-AF	12AT6	12AT6	7BT	
V4	Power Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150	1217027	PRSA150/40 -40	EDL4418		DSB-2x40 -150	TA-440	Filter Red
C1B	40	150							" "
C2	.05	200	7236842	P288-05	GT2S5		ST-4-05	TM-15	AVC Filter
C3	.05	600	7230592	P688-05	GT6S5		ST-6-05	TM-15	Phono Isolation
C4	50		Note 1	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Audio Coupling
C5	.001	600	1217790	P688-001	GT6D1	GP2L-001	ST-6-001	TM-21	Tone Comp.
C6	.003	600	1216132	P688-003	GT6D3	GP2M-003	ST-6-003	TM-23	" "
C7	50		Note 2	P688-005	GT6D5	GP2M-005	ST-6-005	TM-21	Audio Coupling
C8	.01	200	7238790	P488-01	GT2S1	GP2-335-01	ST-4-01	TM-11	Output Plate Bypass
C9	.2	400	7238787	P488-22	GT4P2		ST-4-2	72P3	Line Isolation
C10	.05	600	7230582	P688-05	GT6S5		ST-6-05	TM-15	Rect. Plate Bypass

Note 1. Items C4 and R5 are combined into one unit obtainable under Mfgrs. Part No. 1218258
Note 2. Items C7 and R8 are combined into one unit obtainable under Mfgrs. Part No. 1218259

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DELCO PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	5 MEG	½	1216758	D13-133	AM-6C-Z	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to R1A Per Instr.
C	Switch		Not Req.	41	SW-A	Attach to R1A Per Instr.

RESISTORS

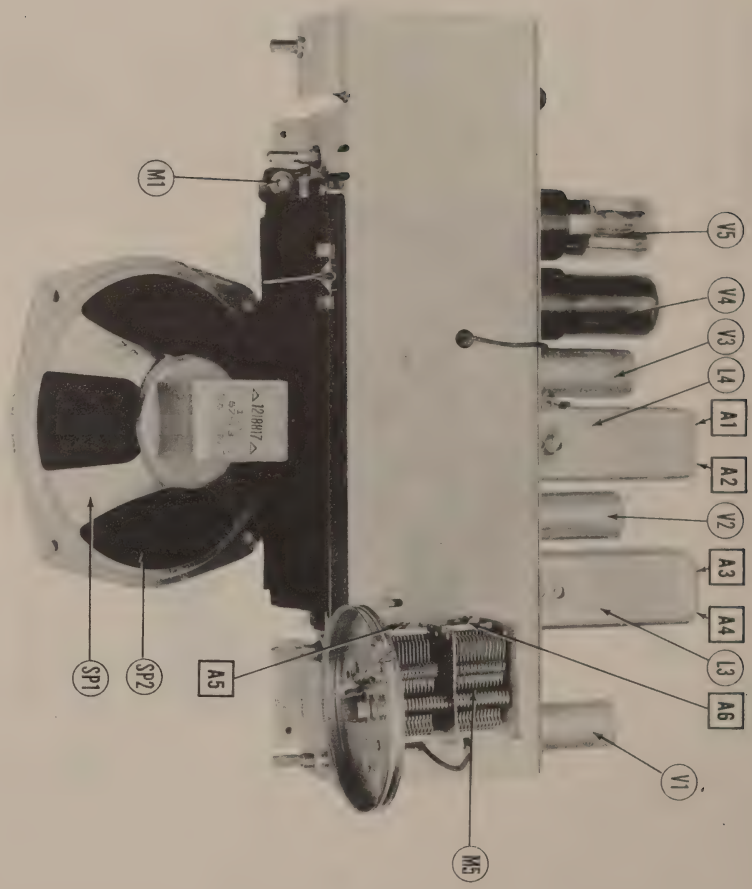
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DELCO PART No.	IRC PART No.	IDENTIFICATION CODES	
R2	22KΩ	½	1214550	BTS-22K	Red-Red-Or.	OSC. Grid
R3	100Ω	½	1213217	BW-½-100	BR.-Blk.-Br.	IF Cathode
R4	3.3Meg.	½	1214564	BTS-3.3Meg.	Or.-Or.-Grn.	AVC Network
R5	6.8Meg.	½	See Note 1	BTS-6.8Meg.	Blue-Gray-Grn.	AF Grid
R6	150Ω	½	1213220	BW-½-150	Br.-Grn.-Br.	Output Cathode
R7	220KΩ	½	1214555	BTS-220K	Red-Red-Yl.	AF Plate
R8	470KΩ	½	See Note 2	BTS-470K	Yl.-Vi.-Yl.	Output Grid
R9	1Meg.	½	1213282	BTS-1Meg.	Br.-Blk.-Grn.	Series Phono
R10	100Ω	1	1211C37	BTA-1000	Br.-Blk.-Red	Filter
R11	33Ω	½	1214538		Or.-Or.-Blk.	Rectifier Ballast

Note 1. Items # C4 and R5 are combined into one unit, obtainable under Mfgr's. PT#1218258
Note 2. Items # C7 and R8 are Combined into one unit, obtainable under Mfgr's. PT#1216259

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: DELCO PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	INSTALLATION NOTES
T1	2400Ω	3.2Ω	215Ω	.6Ω	1217034	A-3876	RO-2	A-2329	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: DELCO PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V.C.IMP.		ST-803		
SP1	PM	3.2Ω	1218817	Mod.P525-V	52A1	
	Cone DIA.	V.C.DIA.				
SP2	5 1/2"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: DELCO PART No.	MEISSNER PART No.	
L1	Loop Ant.	1.5Ω		1218776		
L2	OSC. Coil	.5Ω	5.5Ω	1218781	*14-1060	*Add 50 MMF Cap. from high side of tuning cap. to OSC. Grid.
L3	Input I.F.	15Ω	15Ω	1217972	16-6658	
L4	Output I.F.	17Ω		1217973	16-6670	

DIAL LIGHTS

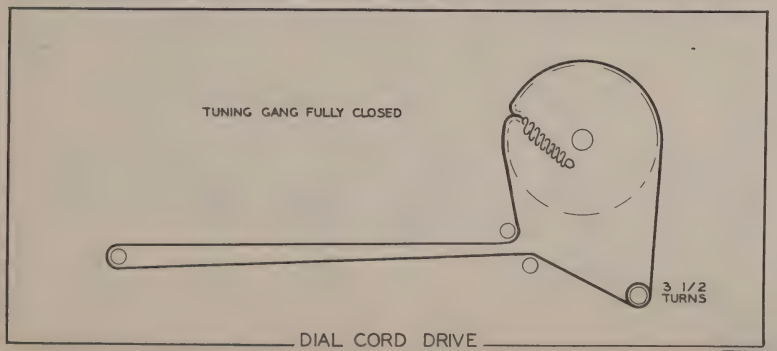
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: DELCO PART No.		NOTES
M1	Bayonet	6-8V	0.15A	Brown	435433		Type #47

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: DELCO PART No.	ASTATIC PART No.	REMARKS
M2		LT-2M	

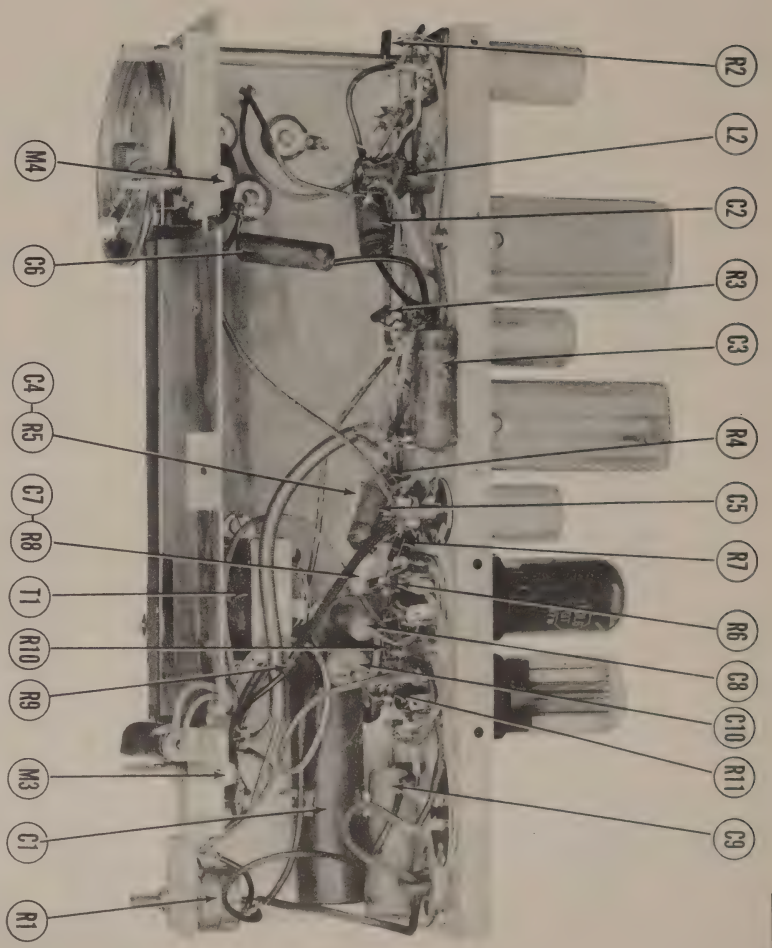
MISCELLANEOUS

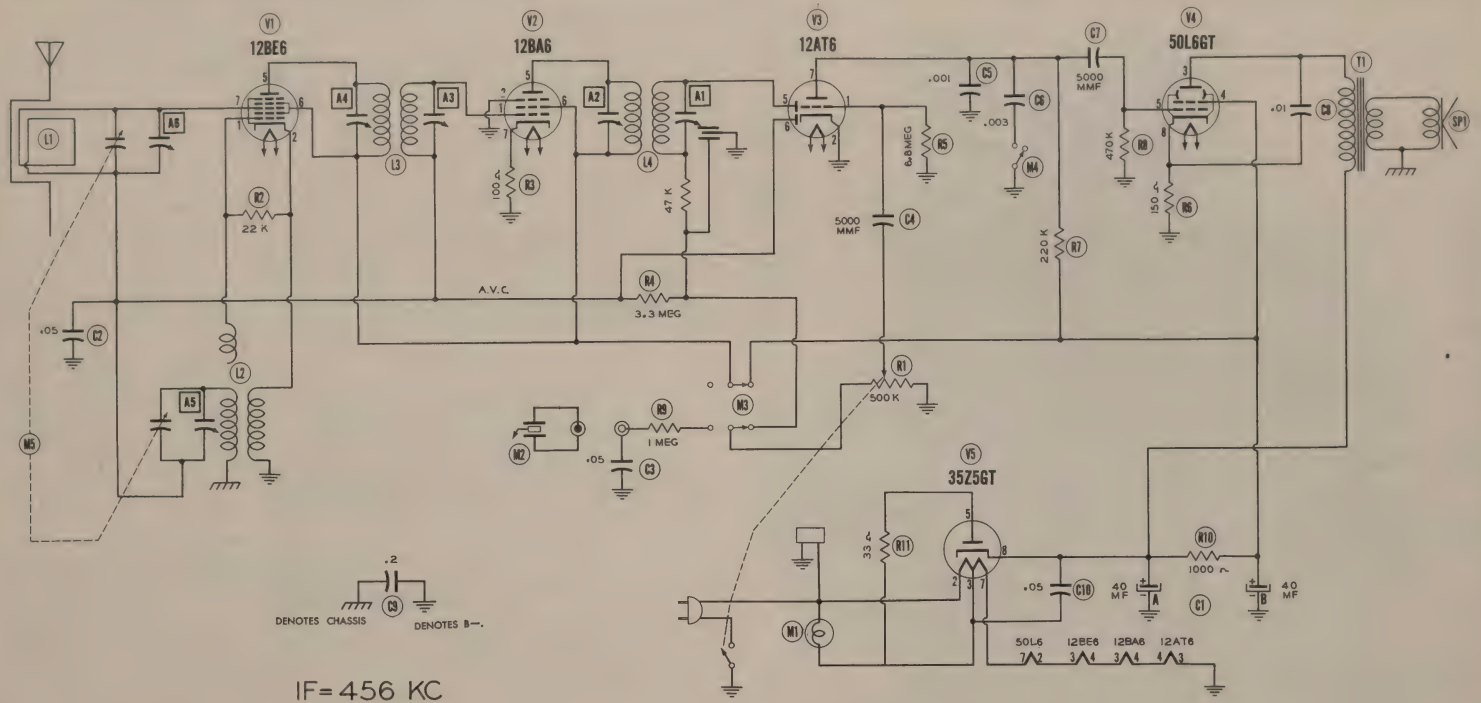
ITEM No.	PART NAME	DELCO PART No.	NOTES
M3	Switch	1218062	Radio-Phono
M4	Switch	1218806	Tone
M5	2 Gang Var. Cap.	1219130	(23-455MMF. 28-198 MMF.)
	Dial Pointer	1218737	
	Dial	1218818	
	Cabinet	1219131	
	Knob	1218084	Volume /Tone/ Radio-Phono
	Knob	1218085	Tuning



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12BE6	§-9.6VDC	0V	42VAC	28VAC	95VDC	95VDC	0V	
V 2	12BA6	-.7VDC	0V	28VAC	14VAC	95VDC	95VDC	1VDC	
V 3	12AT6	-.6VDC	0V	0V	14VAC	-.7VDC	-.7VDC	50VDC	
V 4	50L6GT	0V	42VAC	108VDC	95VDC	0V	0V	90VAC	6VDC
V 5	35Z5GT	0V	117VAC	112VAC	0V	110VAC	0V	90VAC	115VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12BE6	22KΩ	.8Ω	36Ω	24Ω	*1000Ω	*1000Ω	3Meg.	
V 2	12BA6	3 Meg.	0Ω	24Ω	12Ω	*1000Ω	*1000Ω	100Ω	
V 3	12AT6	6.8Meg.	0Ω	0Ω	12Ω	4 Meg.	580KΩ	220KΩ	
V 4	50L6GT	INF.	36Ω	*210Ω	*1000Ω	470KΩ	0Ω	85Ω	15Ω
V 5	35Z5GT	INF.	115Ω	112Ω	INF.	145Ω	INF.	85Ω	100KΩ

* Measured from pin 8 of V5

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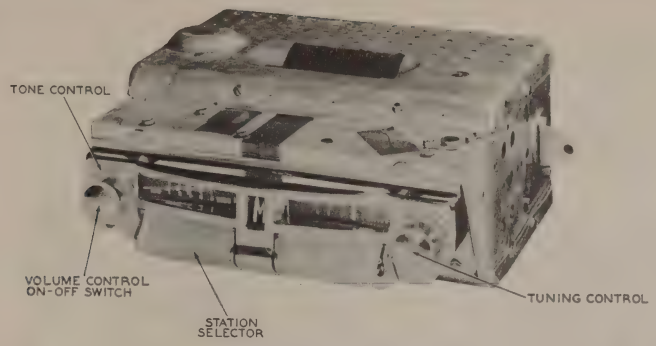
4910-11

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



FORD MODEL 6MF780

TRADE NAME	Ford, Model 6MF780 (51A-18805-A1); Mercury, Model 6MM790 (59A-18805-A1)
SUPPLIER	Ford Motor Car Co., Detroit, Michigan
TYPE SET	Battery Operated Custom Built Automotive Superheterodyne Receiver
TUBES(SIX)	Types 7A7 RF Amp., 7B8 Converter, 7A7 IF Amp., 7B6 DET.-AVC-AF, 7C5 Power Output, 7Y4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 5.3 Amp. @ 6 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting. The dummy antenna using two 30MMF capacitors is critical and no other values should be used.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (Grid) 7B8 (V2) Low side to chassis.	265KC	Tuning Assy. fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. Repeat adjustments to assure accurate alignment.
2.	Two 30MMF Cap.	Connect two 30MMF cap. in series across generator output terminals. Connect junction of these two capacitors to Ant. terminal and the ground side of the generator to the receiver chassis.	535KC	535KC	"	A5	Adjust for maximum output.
3.	Two 30MMF Cap.	"	1200KC	1200KC	"	A6, A7	Adjust for maximum output. If dial calibration is not correct loosen dial scale mounting screws and slide scale to desired position.
			RF ALIGNMENT IF COIL OR CORE HAS BEEN REPLACED				
4.	Two 30MMF Cap.	"	1700KC	1600KC	"	A5	Before adjusting A5 for maximum output, screw A8, A9 & A10 out of their respective coils.
5.	Two 30MMF Cap.	"	"	"	"	A6, A7	Adjust for maximum output. Return slugs A8, A9 and A10 to their approximate original positions.
6.	Two 30MMF Cap.	"	1200KC	1200KC	"	A8, A9, A10	Adjust for maximum output.
7.	Two 30MMF Cap.	"	600KC	600KC	"	A11	Rock tuning assembly and adjust for maximum output. Check calibration at 1200KC. If receiver is weak or off calibration, repeat step 6.

After alignment has been completed, if the tuning range is greater or less than 1605KC, bend the mechanical stop on the tuner cross arm to limit the frequency coverage to 1605KC.
After receiver has been installed in car, tune in weak station at approximate 1200KC and adjust A7 for maximum volume.

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DATE 5/49 4910-12 SET #62 FOLDER 12

FORD MODEL
6MF780 (51A-18805-A1)

FORD MODEL
6MF780 (51A-18805-A1)

PARTS LIST AND DESCRIPTIONS

FORD MODEL 6MF780

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	7A7	7A7	8V	
V2	Converter	7B8	7B8	8X	
V3	IF Amp.	7A7	7A7	8V	
V4	DET.-AVC-AF	7B6	7B6	8W	
V5	Power Output	7C5	7C5	6AA	
V6	Rectifier	7Y4	7Y4	5AB	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	350	22-1554	AF44J	UP15D35		DY-2x15-350	EL-254	■ Filter
B	10	300					"		▲ "
C2	.01	600	22-1170	P688-01	GT6S1	GP2-335-01	ST-6-01	TM-11	Ant. Isolation
C3	100	500	22-365	1468-0001	5W5T1	NP0M-100	MO.5-31	1FM-31	Fixed Trimmer
C4	.1	200	22-190	P288-1	GT2P1		ST-2-1	TM-1	Cathode Bypass
C5	.05	200	22-250	P288-05	GT2S5		ST-4-05	TM-15	AVC Filter
C6	100	500	22-162	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	RF Coupling
C7	250	500	22-1136	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	Fixed Trimmer
C8	100	500	22-162	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Osc. Grid Cap.
C9	350		22-1478						Fixed Trimmer
C10	100	500	22-162	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Osc. Feedback
C11	.1	400	22-170	P488-1	GT4P1		ST-4-1	TM-1	Decoupling
C12	.02	200	22-1270	P488-02	GT2S2		ST-4-02	TM-12	Tone Comp.
C13	.005	200	22-906	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Audio Coupling
C14	.02	200	22-1270	P488-02	GT2S2		ST-4-02	TM-12	RF Bypass
C15	.003	600	22-1180	P688-003	GT6D3	GP2M-003	ST-6-003	TM-23	Tone Comp.
C16	250	500	22-182	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	AF Plate Bypass
C17	.01	600	22-1170	P688-01	GT6S1	GP2-335-01	ST-6-01	TM-11	Audio Coupling
C18	.005	600	22-838	P688-005	GT6D5		ST-6-005	TM-25	Output Plate Bypass
C19	.008	1600	22-1448		GT16D8		STM-16-008	MB-28	Buffer
C20	.5	120	22-908				SHH-1		Hash Filter
C21	.5	120	22-908				SHH-1		" "

CONTROLS

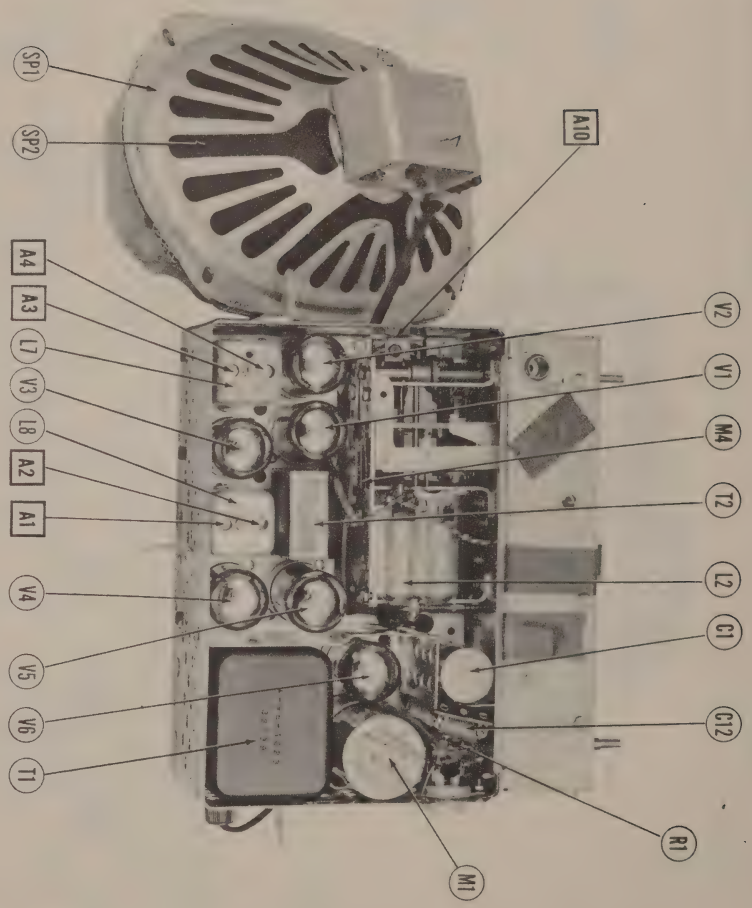
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1a	250KΩ	½	63-1333			Volume control and SW. tapped @ 100KΩ
b	1.5 Meg	½				Tone control
R2	800Ω	1	63-1379 or 63-1267			Sensitivity control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES	
R3	330KΩ	½	63-1392	BTS-330K	Or.-Or.-Yl.	RF Grid
R4	18KΩ	½	63-1411	BTS-18K	Br.-Gray-Or.	RF Plate Load
R5	330KΩ	½	63-1392	BTS-330K	Or.-Or.-Yl.	AVC Network
R6	56KΩ	½	63-1431	BTS-56K	Grn.-Blue-Or.	Osc. Grid
R7	15KΩ	½	63-1401	BTS-15K	Br.-Grn.-Or.	Osc. Anode
R8	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue	AVC Network See Note
R9	33KΩ	1	63-1398	BTA-33K	Or.-Or.-Or.	IF Screen
R10	1 Meg.	½	63-1390	BTS-1 Meg.	Br.-Blk.-Grn.	AVC Network
R11	15 Meg.	½	63-1406	BTS-15 Meg.	Br.-Grn.-Blue	AF Grid
R12	22KΩ	½	63-1395	BTS-22K	Red-Red-Or.	Tone Compensation
R13	1 Meg.	½	63-1390	BTS-1 Meg.	Br.-Blk.-Grn.	Isolation
R14	330KΩ	½	63-1392	BTS-330K	Or.-Or.-Yl.	AF Plate
R15	330KΩ	½	63-1392	BTS-330K	Or.-Or.-Yl.	Output Grid
R16	270Ω	1	63-1369	BW-1-270	Red-Vi.-Br.	Output Cathode
R17	1800Ω	2	63-1368	BT-2-1800	Br.-Gray-Red	Filter
R18	82Ω	½	63-1399	BW-½-82	Gray-Red-Blk.	Hash Suppression
R19	82Ω	½	63-1399	BW-½-82	Gray-Red-Blk.	Hash Suppression

Note. Some models use 15 Meg. resistor in this application, replacement same as item R11.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	ZENITH PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
T1A	6VDC @ 5.3A	440VCT @ .043 ADC			95-1023		VT-14	
B					95-1024*			

* Alternate vibrator transformer.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	6200Ω	3.5Ω	540Ω	.4Ω	95-1026	A-3877†	RO-13	A-2930†	† Trim mounting tabs to duplicate original.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ZENITH PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.*		ST-810		
SP1	PM	3.5Ω	49-539	MOD. P69-V	69A3	
	CONE DIA.	V. C. DIA.				
SP2	6" x 9"	3/4"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.
L1	Ant. Choke	1Ω		S8819	
L2	Ant. Coil	10Ω		S-13650	
L3	RF Coil	14Ω		S-11041	
L4	Osc. Coil	2Ω		S-11041	
L5	Osc. Shunt	2Ω		S-13646	
L6	Osc. Series	1Ω		S-11229	
L7	Input IF	60Ω	60Ω	95-916	
L8	Output IF	60Ω		95-942	
L9	Hash Choke	0Ω		20-213	
L10	Noise Choke	0Ω		S-11232	
L11	Clutch Coil	.3Ω		S-10826	

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				ZENITH PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	Int.	6.0V	115∿	190-20	C01	5301	

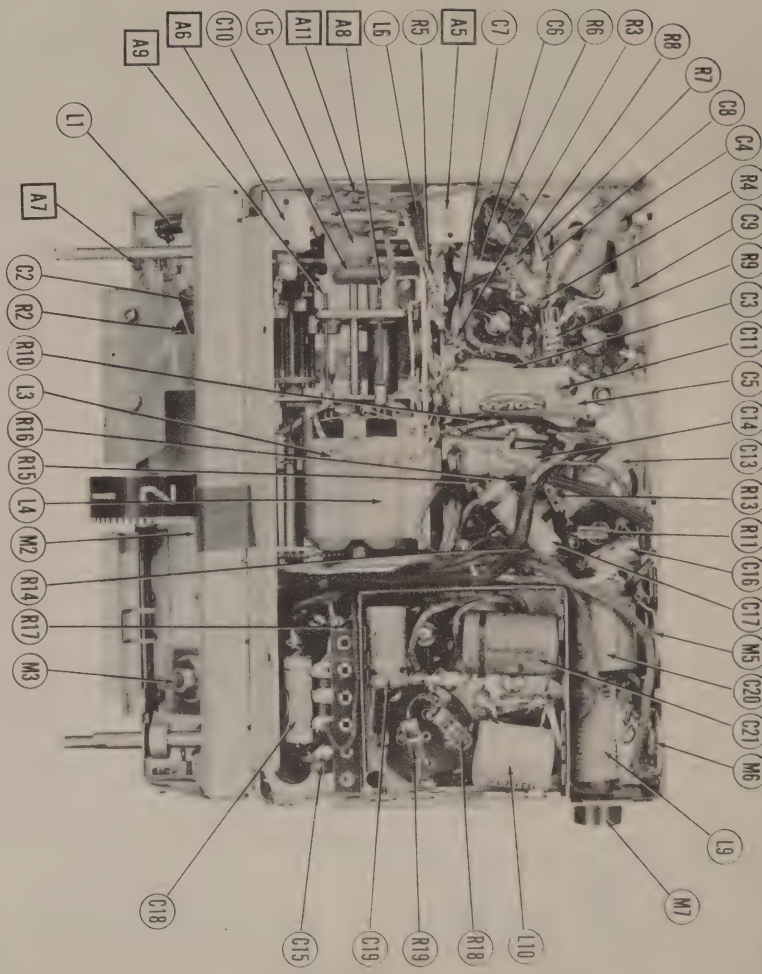
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					ZENITH PART No.		
M2	Bayonet	6-8V	0.4A	White	100-31		Type #55

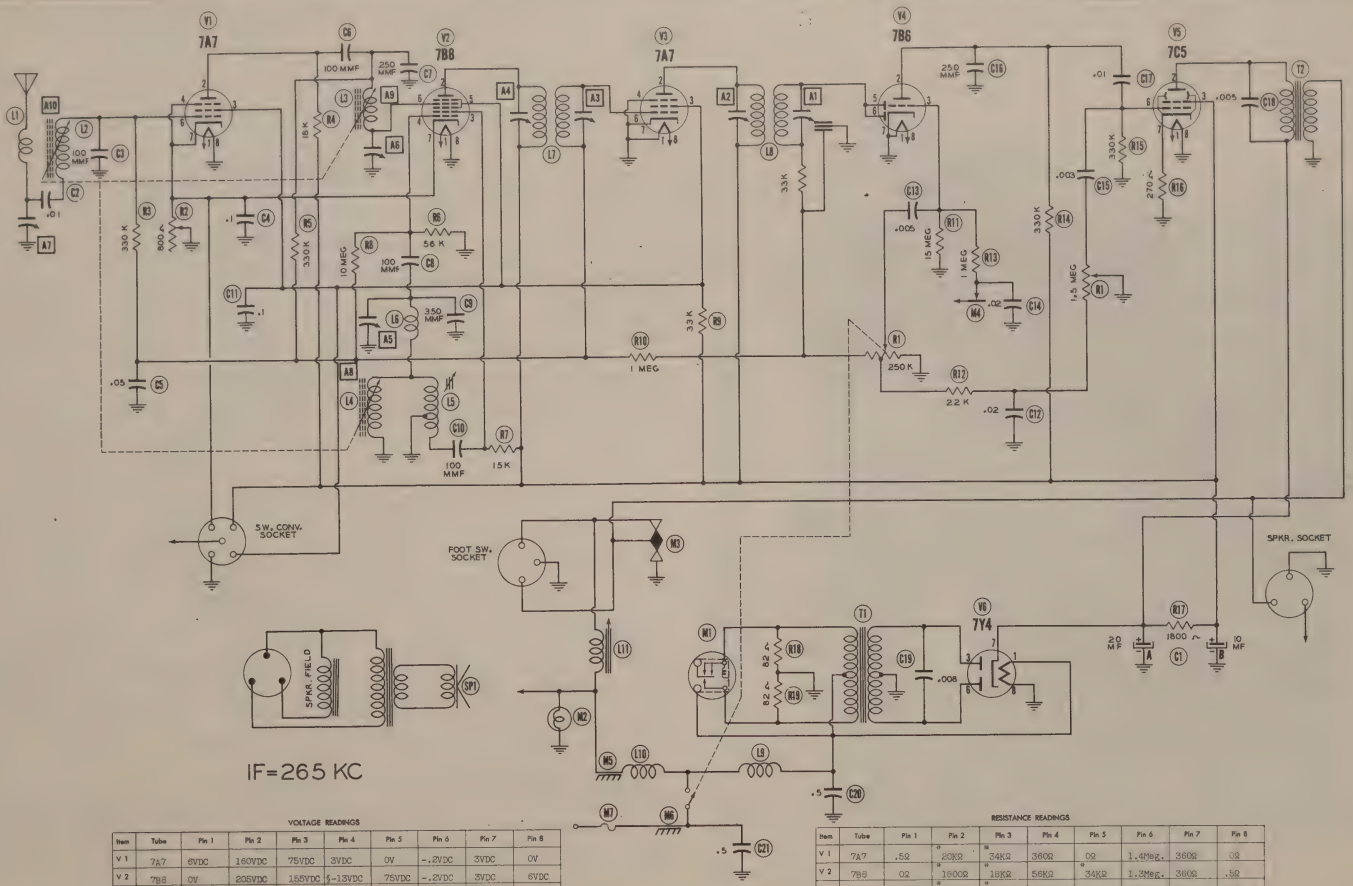
MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M3	Switch	S-11270	Muting and s tation change
M4	Switch	S-11270	Delayed Mute
M5	Spark Plate		
M6	Spark Plate		
M7	Fuse	136-12	20 Amp.
A5	Trimmer	22-1378	Osc. Adj.
A6	"	22-1377	RF Adj.
A7	"	22-1643	Ant. Adj.

CHASSIS—BOTTOM VIEW



DATE 5/49 4910-12 SET #62 FOLDER 12
MODEL 6MP790
FORD
MODEL 6MP790



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	7A7	6VDC	160VDC	75VDC	3VDC	0V	-.2VDC	3VDC	0V
V 2	7B8	0V	205VDC	165VDC	4-13VDC	75VDC	-.2VDC	3VDC	6VDC
V 3	7A7	6VDC	205VDC	75VDC	0V	0V	-.2VDC	0V	0V
V 4	7B6	6VDC	100VDC	-.5VDC	0V	-.6VDC	-.6VDC	0V	0V
V 5	7C5	6VDC	220VDC	205VDC	0V	0V	0V	8VDC	0V
V 6	7Y4	0V	0V	250VAC	0V	0V	250VAC	240VDC	6VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	7A7	.5Ω	20KΩ	34KΩ	360Ω	0Ω	1.4Meg.	360Ω	0Ω
V 2	7B8	0Ω	1800Ω	18KΩ	56KΩ	34KΩ	1.3Meg.	360Ω	.5Ω
V 3	7A7	.5Ω	1800Ω	34KΩ	0Ω	0Ω	1Meg.	0Ω	0Ω
V 4	7B6	.5Ω	330KΩ	15Meg.	0Ω	270KΩ	270KΩ	0Ω	0Ω
V 5	7C5	.5Ω	50Ω	1800Ω	INF.	INF.	330KΩ	270Ω	0Ω
V 6	7Y4	0Ω	INF.	360Ω	INF.	INF.	310Ω	80KΩ	.5Ω

* Measured from pin 7 of V6

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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4910-12

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

MAGNAVOX CHASSIS
CT-214, CT-218, CT-221

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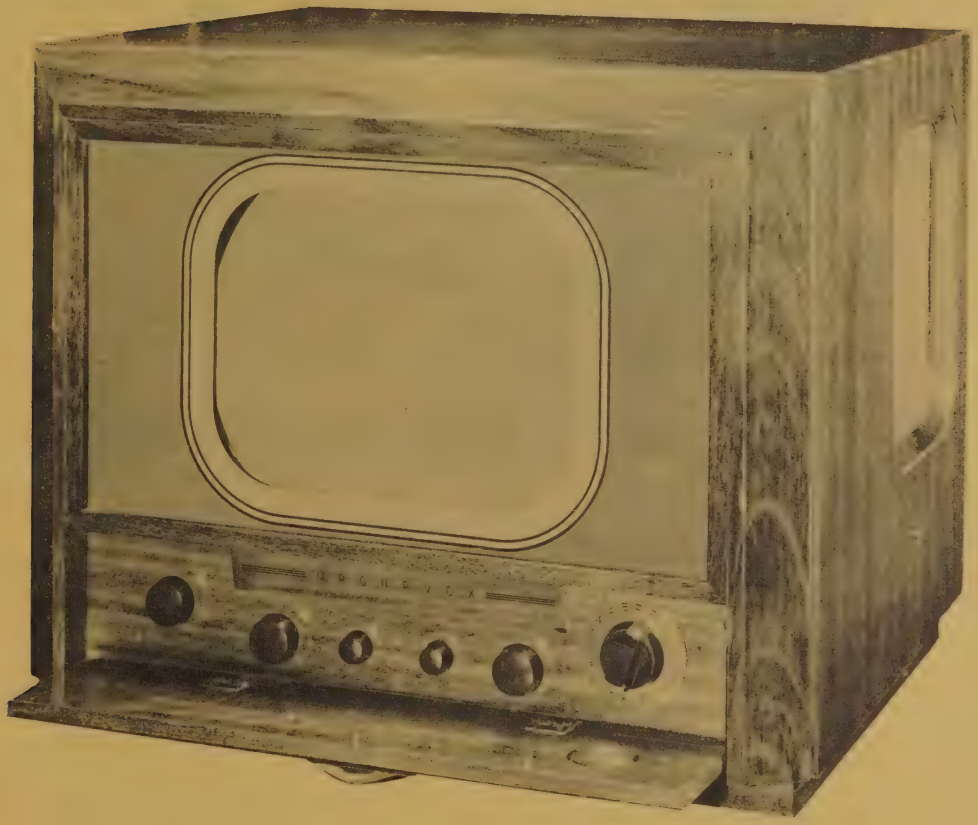

MAGNAVOX CHASSIS
CT-214, CT-218, CT-221

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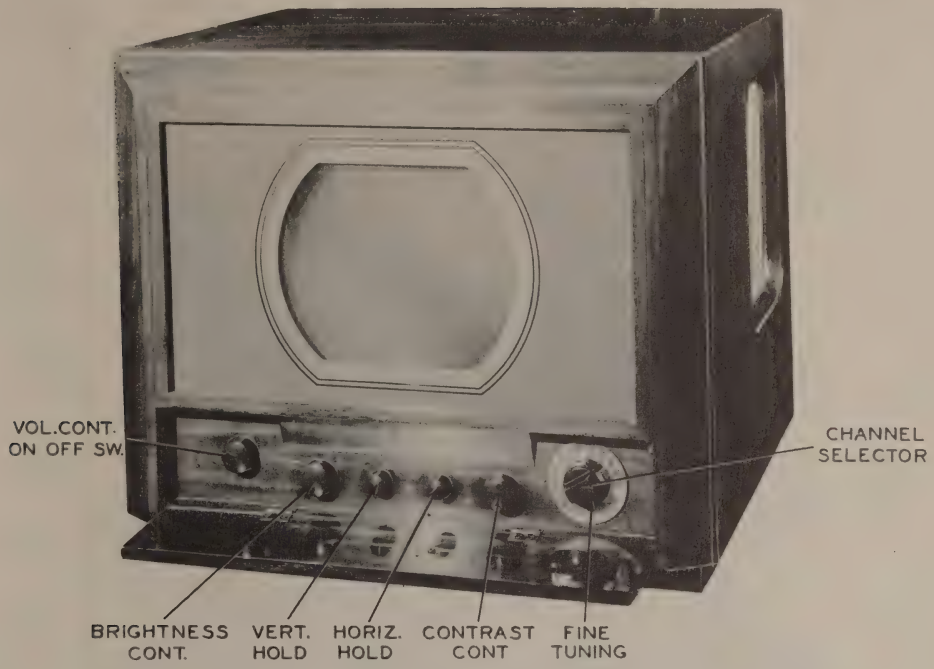
MAGNAVOX CHASSIS CT-214, CT-218, CT-221



MAGNAVOX CHASSIS CT-214, CT-218, CT-221

TRADE NAME	Magnavox Chassis CT214, CT218, CT221
MANUFACTURER	Magnavox Co., 2131 Bueter Rd., Fort Wayne, Indiana
TYPE SET	Television Receiver
TUBES	Twenty-three
POWER SUPPLY	105-125 Volts, 60 cycle AC RATING 2.0 Amps. @ 117 Volts

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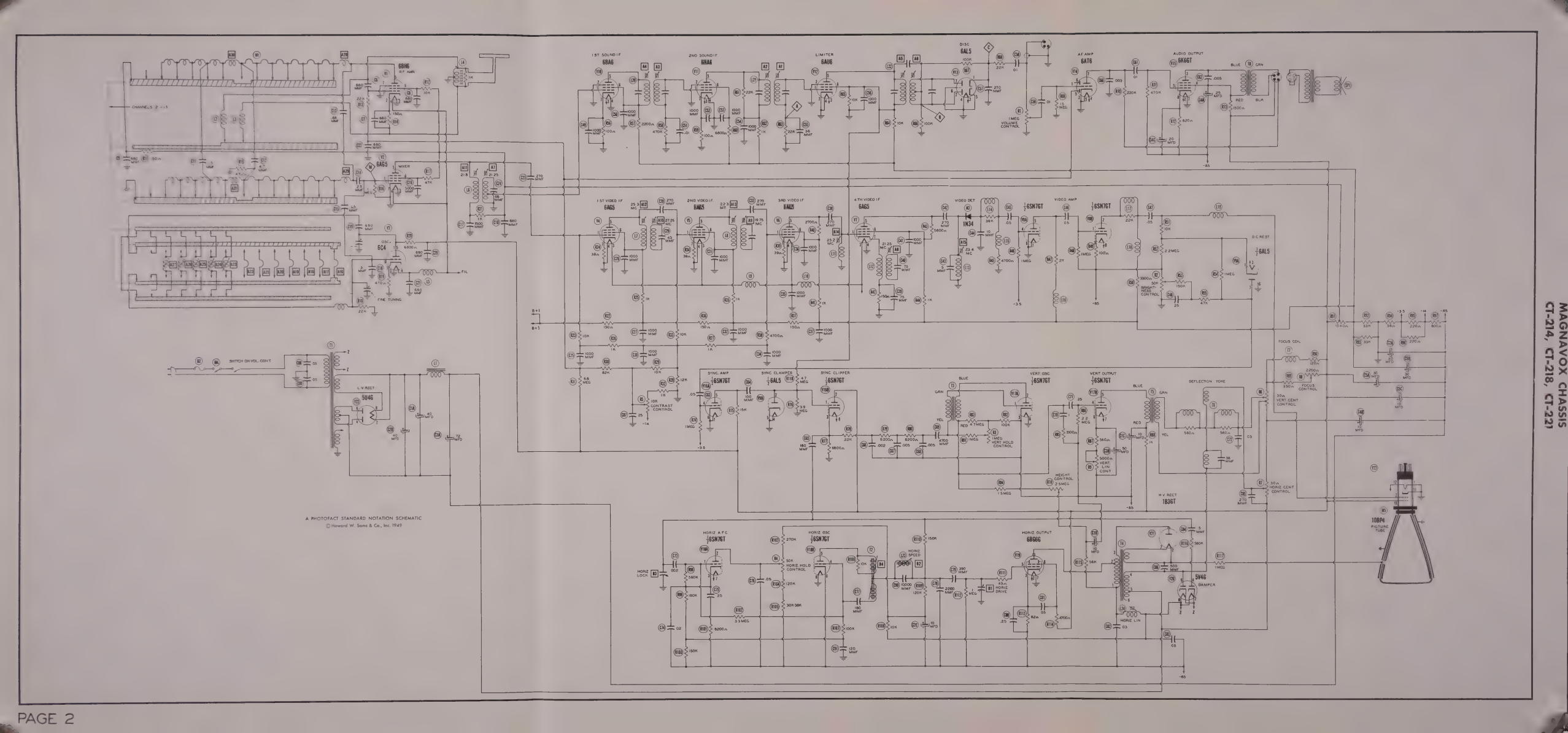
DATE 5/49 4910-13 SET #62 FOLDER 13


MAGNAVOX CHASSIS
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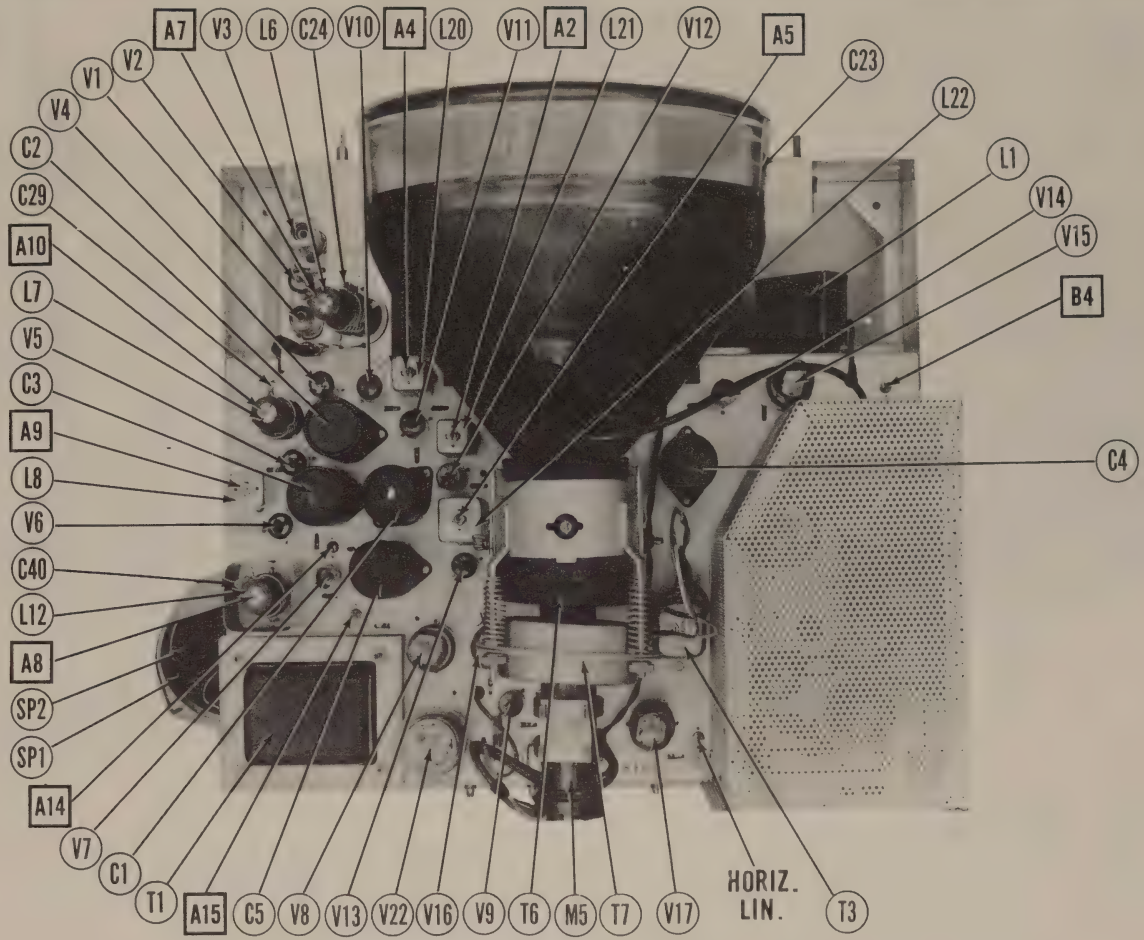
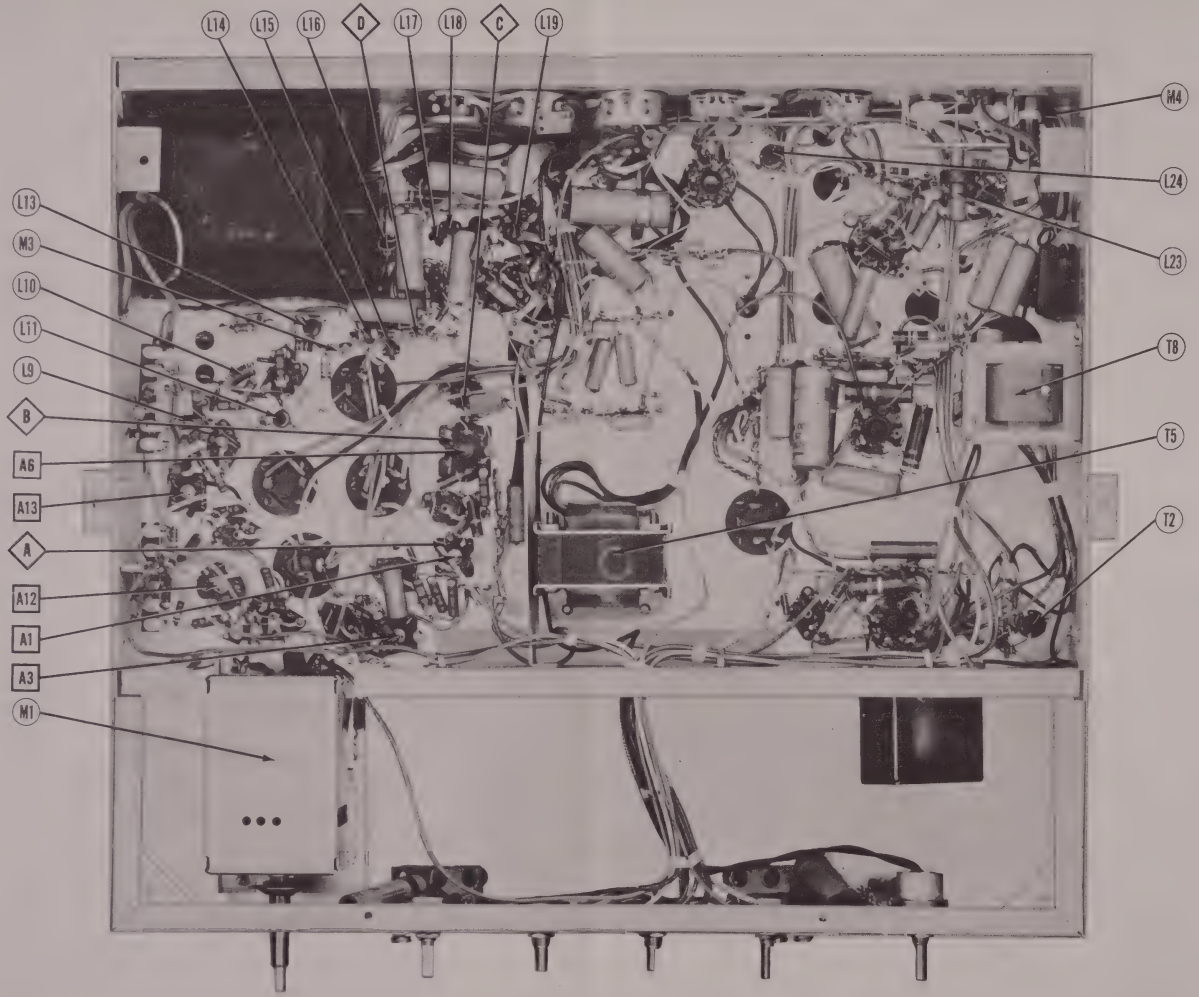
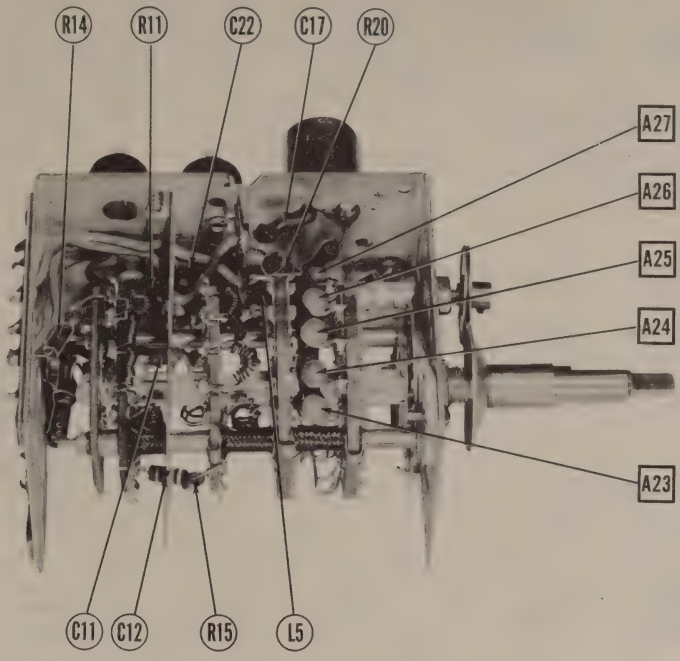


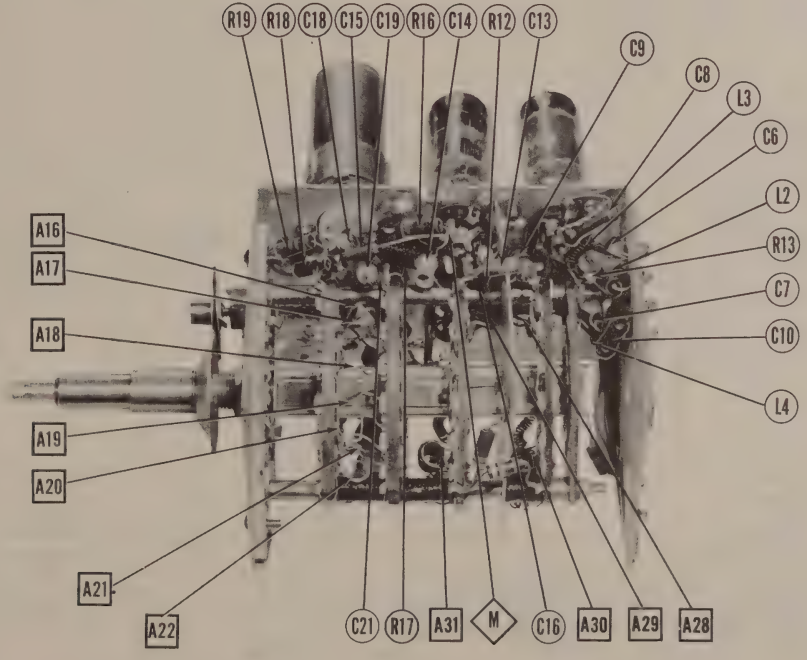
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



RF TUNER-LEFT SIDE



RF TUNER-RIGHT SIDE

ALIGNMENT INSTRUCTIONS

TO DISABLE HIGH VOLTAGE REMOVE HORIZONTAL OSCILLATOR TUBE (V18) FROM SOCKET.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.01MFD	High side to Pin 1 (Grid) of 6BA6 (V11) Low side to chassis.	21.25MC	Any	DC Probe to Point (A) Common to chassis.	A1, A2	Adjust for maximum deflection.
2.	.01MFD	High side to Pin 1 (Grid) of 6BA6 (V10) Low side to chassis.	21.25MC	Any	"	A3, A4	" " " "
3.	.01MFD	"	"	"	DC Probe thru 1 Meg. to Point (B) Common to chassis.	A5	" " " "
4.	.01MFD	"	"	"	DC Probe thru 1 Meg to Point (C) Common to chassis.	A6	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. If A6 required much adjustment, repeat steps 3 & 4.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.01MFD	High side to Pin 1 (Grid) of 6BA6 (V10) Low side to chassis.	21.25MC (450KC Sweep)	21.25MC	Any	Vert. Amp. to point (A) Low side to chassis.	A1, A2, A3, A4	Adjust for maximum amplitude and symmetry as per fig. 1.
2.	.01MFD	"	"	"	"	Vert. Amp. to point (C) Low side to chassis.	A5, A6	Adjust A5 for maximum amplitude and straightness of crossover lines as per fig. 2. Adjust A6 so crossover point occurs at center of the pattern. Continue with Step 5.

VIDEO IF ALIGNMENT

This receiver employs one of three RF tuners. To inject the signal into the video IF channel, determine which tuner is being used, and inject signal as outlined.
SARKES TARZIAN TUNER: Remove the oscillator tube (V3) and fashion a coil of hookup wire around the mixer tube. Connect the high side of the signal generator to the coil and the low side to chassis.
RCA or GENERAL INSTRUMENT: Inject signal across the mixer grid resistor (point L for RCA tuner and point K for General Instrument tuner) accessible through hole in side of chassis.
Set the contrast control to approximately -3 volts.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.		See Instructions above.	21.25MC	Any	DC Probe to Point (D) Common to chassis.	A7, A8	Adjust for minimum reading.
6.		"	19.75MC	"	"	A9	" " " "
7.		"	27.25MC	"	"	A10	" " " "
8.		"	21.8 MC	"	"	A11	Adjust for maximum deflection.
9.		"	25.3 MC	"	"	A12	" " " "
10.		"	22.3 MC	"	"	A13	" " " "
11.		"	25.2 MC	"	"	A14	" " " "
12.		"	23.4 MC	"	"	A15	" " " "

OVERALL VIDEO IF RESPONSE CHECK

Connect the syncronized sweep voltage from the sweep generator to the horizontal amplifier of the oscilloscope for horizontal deflection.
To inject signal in Sarkes Tarzian tuner, loop a few turns of hookup wire around the mixer tube. For the RCA and Gen. Instr. Tuner construct a dummy mixer tube as shown in Figure 5. Remove the oscillator tube to prevent spurious beats.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.		See Instructions listed above.	24MC (10MC Sweep)	19.75MC 21.25MC 25.75MC 27.25MC	Any	Vert. Amp. to point (D) Low side to chassis.		Check to see that response pattern is similar to fig. 3. If necessary, slightly retouch A11, 12, 13, 14, and 15 to obtain proper curve.

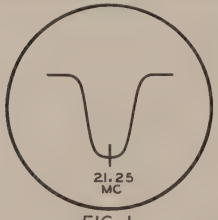


FIG. 1

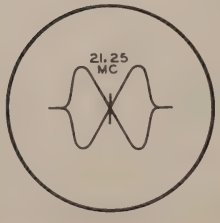
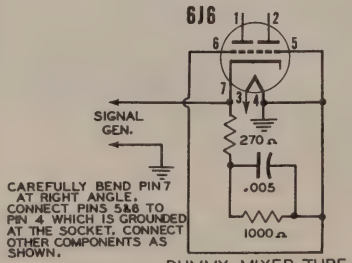


FIG. 2



DUMMY MIXER TUBE
FIG. 5

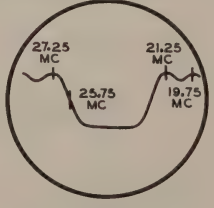


FIG. 3

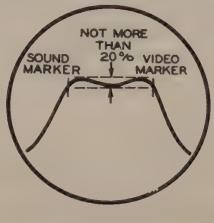


FIG. 4

SINCE THIS RECEIVER USES ONE OF THREE RF TUNERS, IT IS NECESSARY TO DETERMINE THE TYPE TUNER IN THE RECEIVER ON HAND AND FOLLOW THE CORRESPONDING RF AMP. AND OSCILLATOR ALIGNMENTS OUTLINED BELOW.
UNLESS SIGNAL GENERATOR HAS A BALANCED 300Ω OUTPUT CONNECT A CARBON TERMINATING RESISTOR (USUALLY 50 OHMS) ACROSS THE SIGNAL GENERATOR OUTPUT TERMINALS. CONNECT A 125Ω CARBON RESISTOR TO EACH TERMINAL.

OSCILLATOR ALIGNMENT (SARKES TARZIAN CHASSIS CT-218)

To align oscillator circuits, set the fine tuning control to the mid-point of its range and follow the instruction below.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
14.	Two 125Ω carbon res.	Across antenna terminals with 125Ω inserted in each generator lead.	215.75MC	13	DC Probe to Point ◇ Common to chassis.	A16	Turn fine tuning control slightly. If meter reaches the zero point the oscillator setting is correct. If not, reposition the fine tuning control to its midpoint and adjust A16 for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
15.	Two 125Ω carbon res.	"	209.75MC 203.75MC 197.75MC 191.75MC 185.75MC 179.75MC 87.75MC 81.75MC 71.75MC 65.75MC 59.75MC	12 11 10 9 8 7 6 5 4 3 2	"	A17 A18 A19 A20 A21 A22 A23 A24 A25 A26 A27	"

RF AMP & MIXER ALIGNMENT (SARKES-TARZIAN CHASSIS CT-218)

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
16.	Two 125Ω carbon res.	Across antenna terminals.	213MC (10MC Sweep)	211.25MC 215.75MC	13	Vert. Amp. thru 10KΩ to point ◇ Low side to chassis.	A28, A29	Expand or compress coil turns to obtain desired pattern as per Fig. 4. with markers above 80%.
17.	Two 125Ω carbon res.	"	207MC (10MC Sweep) 201MC (10MC Sweep) 195MC (10MC Sweep) 189MC (10MC Sweep) 183MC (10MC Sweep) 177MC (10MC Sweep)	205.25MC 209.75MC 199.25MC 203.75MC 193.25MC 197.75MC 187.25MC 191.75MC 181.25MC 185.75MC 175.25MC 179.75MC	12 11 10 9 8 7	"		Check for response pattern as per Fig. 4. If markers fall below 80% readjust A28, and A29. Then check all channels again.
18.	Two 125Ω carbon res.	"	85MC (10MC Sweep)	83.25MC 87.75MC	6	"	A30, A31	Expand or compress coil turns to obtain desired pattern as per Fig. 4 with markers above 80%.
19.	Two 125Ω carbon res.	"	79MC (10MC Sweep) 69MC (10MC Sweep) 63MC (10MC Sweep) 57MC (10MC Sweep	77.25MC 81.75MC 67.25MC 71.75MC 61.25MC 65.75MC 55.25MC 59.75MC	5 4 3 2	"		Check for response pattern as per Fig. 4. If markers fall below 80%, readjust A30 and A31. Then recheck all channels.

RF AMP & MIXER ALIGNMENT (RCA TUNER CHASSIS CT-214)

Set contrast control to give -1.5 volt reading at the junction of C603 and R603. Bypass the converter plate to ground with 1000MMF.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 125Ω carbon res.	Across antenna terminals with 125Ω resistor in each generator lead.	213MC (10MC Sweep)	211.25MC 215.75MC	13	Vert. Amp. thru 10KΩ to Point ◇ Low side to chassis.	A601, A602, A603, A604	Adjust for approximately flat top response pattern as per Fig. 4 with markers above 80%. Keep slug pairs in same relative position.
15.	Two 125Ω carbon res.	"	207MC (10MC Sweep) 201MC (10MC Sweep) 195MC (10MC Sweep) 189MC (10MC Sweep) 183MC (10MC Sweep) 177MC (10MC Sweep)	205.25MC 209.75MC 199.25MC 203.75MC 193.25MC 197.75MC 187.25MC 191.75MC 181.25MC 185.75MC 175.25MC 179.75MC	12 11 10 9 8 7	"		Check for response curve as per fig. 4. If markers are below 80% on one channel, make slight readjustments of A601, 2, 3, and 4 on that channel. Recheck all other high band channels.
16.	Two 125Ω carbon res.	"	85MC (10MC Sweep)	83.25MC 87.75MC	6	"	A605, A606, A607, A608	Adjust for approximately flat topped response pattern as per Fig. 4 with markers above 80%. Keep slug pairs in same relative position.
17.	Two 125Ω carbon res.	"	79MC (10MC Sweep) 69MC (10MC Sweep) 63MC (10MC Sweep) 57MC (10MC Sweep)	77.25MC 81.75MC 67.25MC 71.75MC 61.25MC 65.75MC 55.25MC 59.75MC	5 4 3 2	"		Check for response curve a s per Fig. 4. If markers are below 80% on one channel, make slight adjustment of A605, 6, 7, 8 on that channel. Recheck all other low band channels.

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT (RCA TUNER CHASSIS CT-214)

Set fine tuning control to the midpoint of its tuning range and follow instructions below.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
18.	Two 125Ω carbon res.	Across antenna terminals with 125Ω resistor in each generator lead.	215.75MC	13	DC Probe to Point ⏚ Common to chassis.	A609, A610	Turn fine tuning control slightly. If meter reaches zero point, the oscillator setting is correct. If not, reposition fine tuning control to its mid-point and adjust A609 & A610 for zero. A positive and negative reading will be obtained on either side of the correct setting. Keep the slug pairs in the same relative position.
19.	Two 125Ω carbon res.	"	209.75MC 203.75MC 197.75MC 191.75MC 185.75MC 179.75MC	12 11 10 9 8 7	"	A611 A612 A613 A614 A615 A616	Adjust for zero reading as outlined above.
20.	Two 125Ω carbon res.	"	87.75MC	6	"	A617, A618	Adjust for zero reading, keeping A617, and A618 in same relative position.
21.	Two 125Ω carbon res.	"	81.75MC 71.75MC 65.75MC 59.75MC	5 4 3 2	"	A619 A620 A621 A622	Adjust for zero reading as outlined above.

22. Wave traps A623 and A624 are used for specific types of interference and their alignment will depend upon the type encountered. With the receiver tuned to the channel having the interference, set fine tuning control until interference is at maximum. Adjust A623 and A624 for minimum interference in the picture and sound keeping the cores approximately the same relative position. Turn one core 1/2 turn, adjust the other for minimum interference.

RF AMP & MIXER ALIGNMENT (GEN. INSTR. CT. 221)

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 125Ω carbon res.	Across antenna terminals with 125Ω resistor in each generator lead.	213MC (10MC Sweep)	211.25MC 215.75MC	13	Vert. Amp. thru 10KΩ resistor to point ⏚ Low side to chassis.	A301, A302, A303, A304	Adjust for response curve approximately to Fig. 4. with markers at 80% amplitude or more. Keep the RF and Mixer Trimmer pairs in approximately same relative position.
15.	Two 125Ω carbon res.	"	177MC (10MC Sweep)	175.25MC 179.75MC	7	"	A305, A306	Adjust rings for waveform as shown in Fig. 4.
16.	Two 125Ω carbon res.	"	183MC (10MC Sweep) 189MC (10MC Sweep) 195MC (10MC Sweep) 201MC (10MC Sweep) 207MC (10MC Sweep)	181.25MC 185.75MC 187.25MC 191.75MC 193.25MC 197.75MC 199.25MC 203.75MC 205.25MC 209.75MC	8 9 10 11 12	"		Check response on channels 8 thru 12. Slight adjustments of A301, 2, 3, 4, 5 and 6 may be required to obtain optimum performance on all high band channels.
17.	Two 125Ω carbon res.	"	85MC (10MC Sweep)	83.25MC 87.75MC	6	"	A307, A308, A309, A310	Adjust for response curve shown in Fig. 4.
18.	Two 125Ω carbon res.	"	79MC (10MC Sweep) 69MC (10MC Sweep) 63MC (10MC Sweep) 57MC (10MC Sweep)	77.25MC 81.75MC 67.25MC 71.75MC 61.25MC 65.75MC 55.25MC 59.75MC	5 4 3 2	"		Check response on channels 2 thru 5. Slight adjustment of A307, 8, 9, 10 may be required to obtain optimum response on all low band channels.

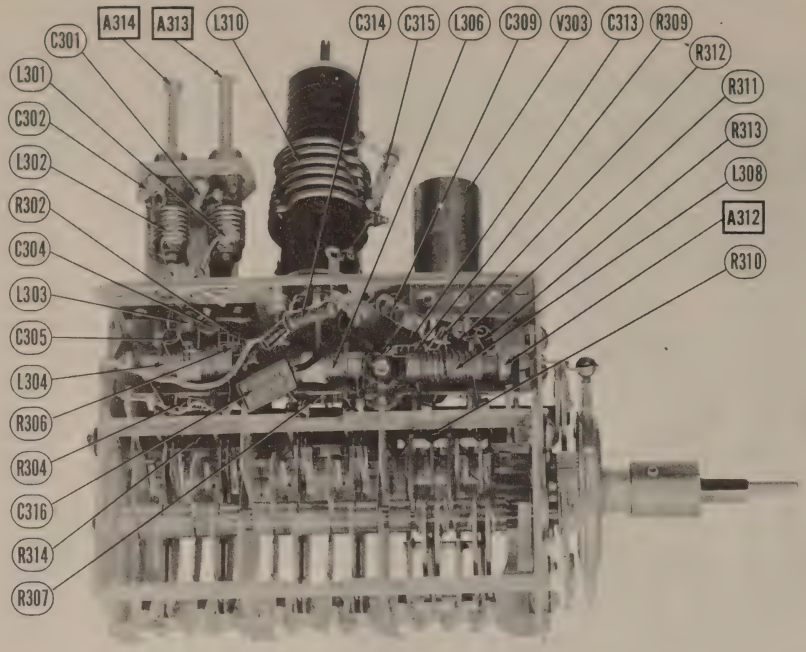
OSCILLATOR ALIGNMENT (GEN. INSTR. CT. 221)

Set fine tuning control to the midpoint of its tuning range.

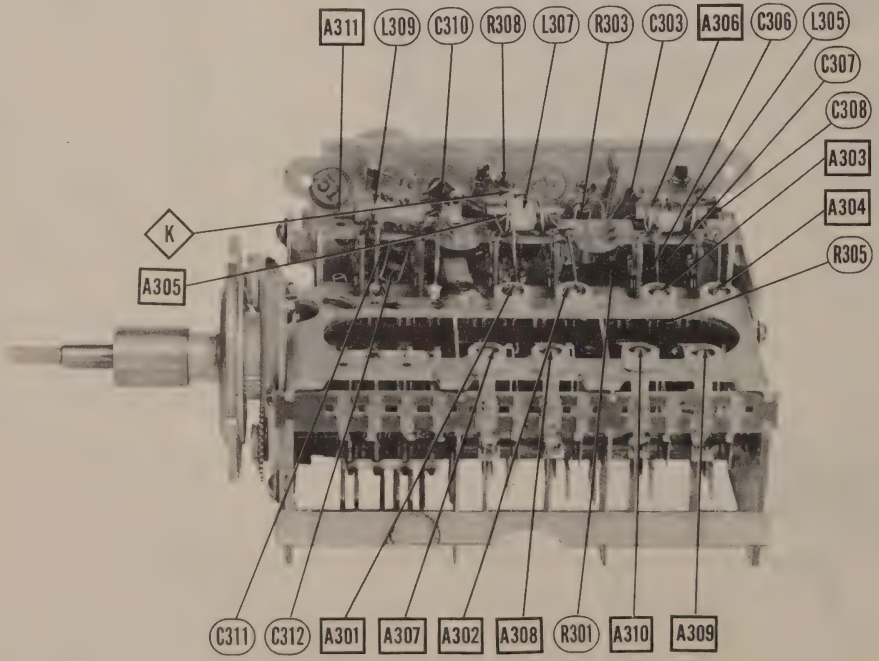
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
19.	Two 125Ω carbon res.	Across antenna terminals with 125Ω resistor in each generator lead.	215.75MC	13	DC Probe to Point ⏚ Common to chassis.	A311	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
20.	Two 125Ω carbon res.	"	87.75MC	6	"	A312	" " "

21. Check to see that all other channels are received well within the limits of the fine tuning control. If not, some compromise may be made by adjusting A311 for the high band channels and A312 for the low band channels.

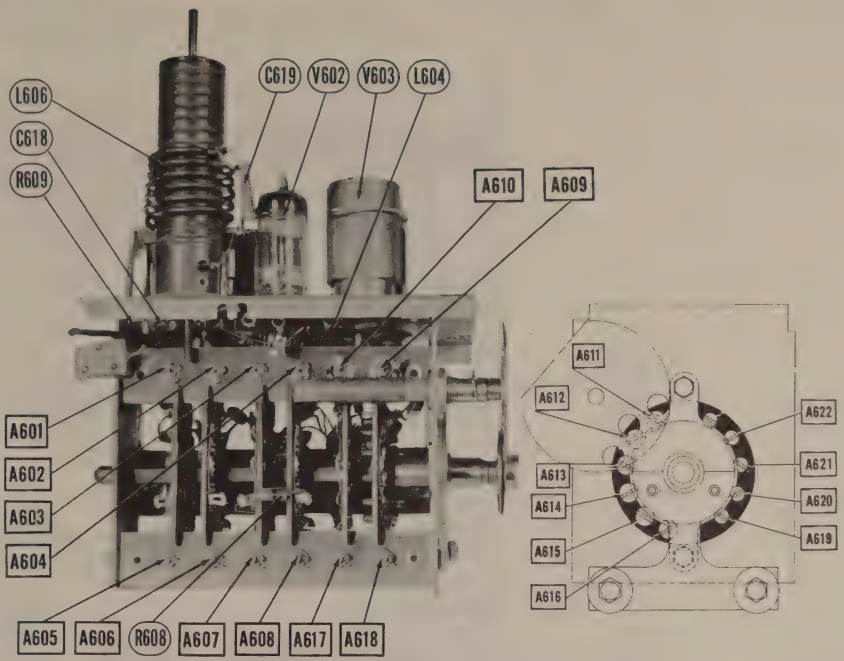
22. Wave traps A313 and A314 are used for specific types of interference and their alignment will depend upon the type encountered. With the receiver tuned to the channel having the interference set fine tuning control until interference is at maximum. Adjust A313 and A314 for minimum interference in the picture and sound, keeping the cores at approximately the same relative position. Turn one core 1/2 turn, adjust the other for minimum interference.



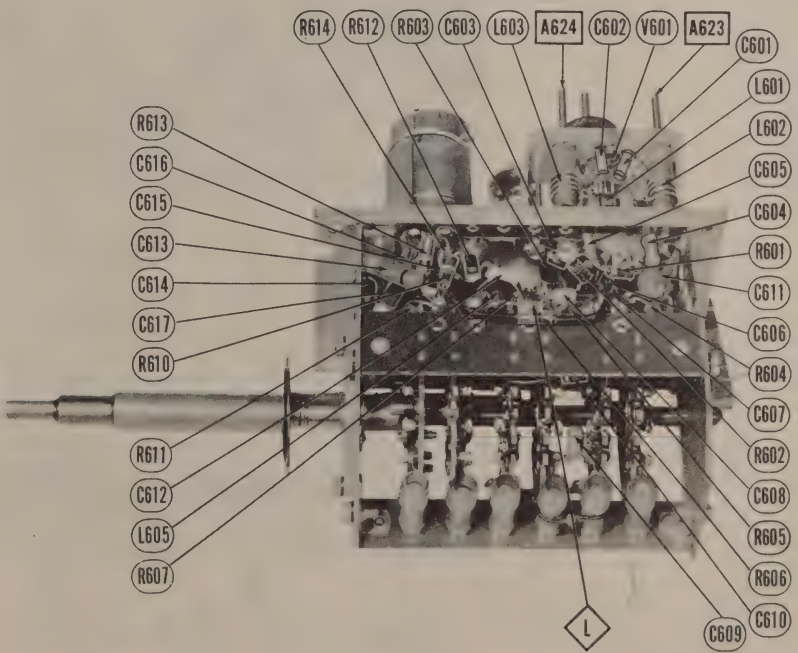
RF TUNER-LEFT SIDE



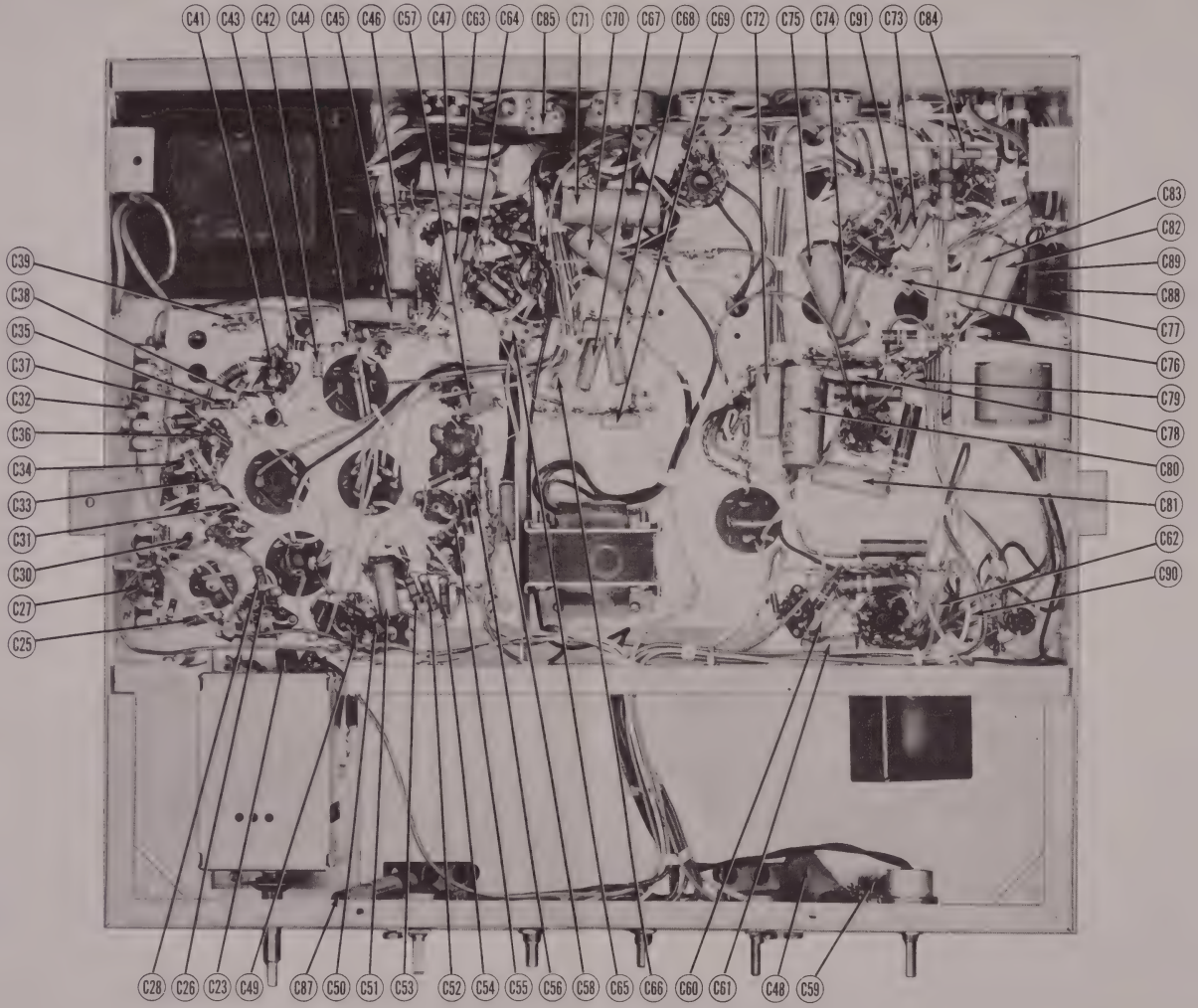
RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



RF TUNER-RIGHT SIDE



CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6BH6	-5.5VDC	.9VDC	0V	6.3VAC	190VDC	190VDC	0V		
2	6AG5	-.8VDC	0V	0V	6.3VAC	190VDC	115VDC	0V		
3	6C4	175VDC	0V	0V	6.3VAC	175VDC	§-.8VDC	4.5VDC		
4	6AG5	-5.6VDC	0V	6.3VAC	0V	145VDC	145VDC	0V		
5	6AG5	-5.7VDC	0V	6.3VAC	0V	145VDC	145VDC	0V		
6	6AG5	-5.8VDC	0V	6.3VAC	0V	145VDC	145VDC	0V		
7	6AG5	0V	1.8VDC	6.3VAC	0V	80VDC	130VDC	1.8VDC		
8	6SN7GT	†0V	†170VDC	†1.8VDC	-.5VDC	130VDC	0V	0V	6.3 VAC	
9	6AL5	-45VDC	-45VDC	6.3VAC	0V	0V	0V	-75VDC		
10	6BA6	0V	0V	6.3VAC	0V	115VDC	115VDC	1.5VDC		
11	6BA6	0V	0V	6.3VAC	0V	135VDC	112VDC	1.5VDC		
12	6AU6	-.2VDC	0V	6.3VAC	0V	50VDC	50VDC	0V		
13	6AL5	0V	-.2VDC	6.3VAC	0V	0V	0V	-.3VDC		
14	6AT6	-.4VDC	0V	0V	6.3VAC	-5.8VDC	-3VDC	85VDC		
15	6K6GT	0V	6.3VAC	† 260VDC	275VDC	†0V	†0V	0V	†21VDC	
16	6SN7GT	-.2VDC	235VDC	10VDC	-.6VDC	130VDC	0V	0V	6.3VAC	
17	6SN7GT	† -26VDC	†80VDC †108.DC	†0V	†-1.3VDC	† 300VDC	† †4.8VDC †19VDC	6.3 VAC	0V	
18	6SN7GT	† -1.5VDC	† 108VDC	† -1VDC	† † -44VDC	†195VDC	†0V	6.3 VAC	0V	
19	6BG6G	0V	6.3VAC	†7.4VDC	†330VDC	† -2VDC	†310VDC	0V	†240VDC	*
20	5V4G	0V	†480VDC	†480VDC	†400VDC	0V	†400VDC	0V	†480VDC	
21	1B3GT	* DO NOT MEASURE								
22	5U4G	0V	310VDC	0V	235VAC	0V	385VAC	-85VDC	310VDC	
23	10BP4	0V	-70VDC	PIN 10 230VDC	PIN 11 0V	PIN 12 6.3VAC				

§ Taken with VTVM
* Do not measure
† Measured from pin 6 of V18

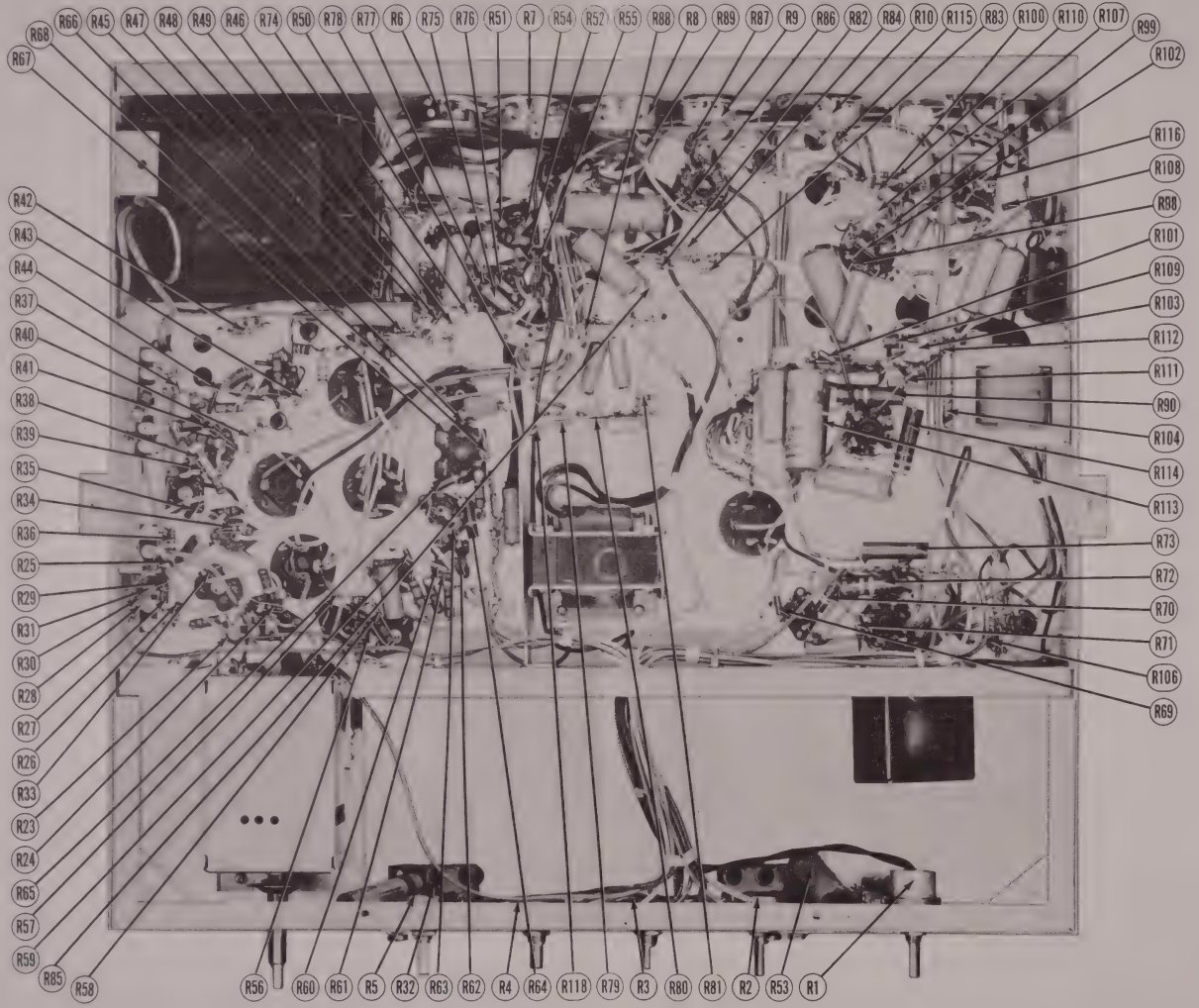
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6BH6	100KΩ	150Ω	0Ω	.2Ω	*1000Ω	*10KΩ	0Ω		
2	6AG5	1Meg.	0Ω	0Ω	.2Ω	*2KΩ	*50KΩ	0Ω		
3	6C4	.6.5KΩ	Inf.	0Ω	.2Ω	*6.5KΩ	22KΩ	470Ω		
4	6AG5	17KΩ	36Ω	.2Ω	0Ω	*2.8KΩ	*2.8KΩ	39Ω		
5	6AG5	15KΩ	39Ω	.2Ω	0Ω	*2.5KΩ	*2.5KΩ	39Ω		
6	6AG5	11KΩ	39Ω	.2Ω	0Ω	*5KΩ	*2.5KΩ	39Ω		
7	6AG5	.2Ω	150Ω	.2Ω	0Ω	*8KΩ	*2.5KΩ	150Ω		
8	6SN7GT	†1Meg.	*4.8KΩ	†100Ω	1Meg.	*3.5KΩ	0Ω	0Ω	.2Ω	
9	6AL5	750KΩ	2.5Meg.	.2Ω	0Ω	0Ω	Inf.	180KΩ		
10	6BA6	0Ω	0Ω	.2Ω	0Ω	*3.5KΩ	*3.5KΩ	100Ω		
11	6BA6	500KΩ	0Ω	.2Ω	0Ω	*2.5KΩ	*9KΩ	100Ω		
12	6AU6	22KΩ	0Ω	.2Ω	0Ω	*10KΩ	*10KΩ	0Ω		
13	6AL5	200KΩ	100KΩ	.2Ω	0Ω	0Ω	0Ω	100KΩ		
14	6AT6	15Meg.	0Ω	0Ω	.2Ω	90KΩ	Inf.	*220KΩ		
15	6K6GT	Inf.	.2Ω	*2.5KΩ	*1800Ω	†470KΩ	†0Ω	0Ω	†820Ω	
16	6SN7GT	2.5Meg.	*500Ω	6.8KΩ	1Meg.	*17KΩ	0Ω	0Ω	.2Ω	
17	6SN7GT	†1Meg.	†2.2Meg †1.2Meg.	†0Ω	†2.2Meg	*2KΩ	†6KΩ †600Ω	.2Ω	0Ω	
18	6SN7GT	†750KΩ	†130KΩ	†300KΩ	†240KΩ	†420KΩ	†0Ω	.2Ω	0Ω	
19	6BG6G	Inf.	.2Ω	†82Ω	*400Ω	†1Meg.	*500Ω	0Ω	6KΩ	‡220Ω
20	5V4G	Inf.	†280KΩ	†280KΩ	*36Ω	Inf.	*36Ω	Inf.	†280KΩ	
21	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	‡480Ω
22	5U4G	Inf.	12KΩ	Inf.	900Ω	Inf.	900Ω	0Ω	12KΩ	
23	10BP4	0Ω	800KΩ	PIN 10 *500Ω	PIN 11 0Ω	PIN 12 .2Ω				

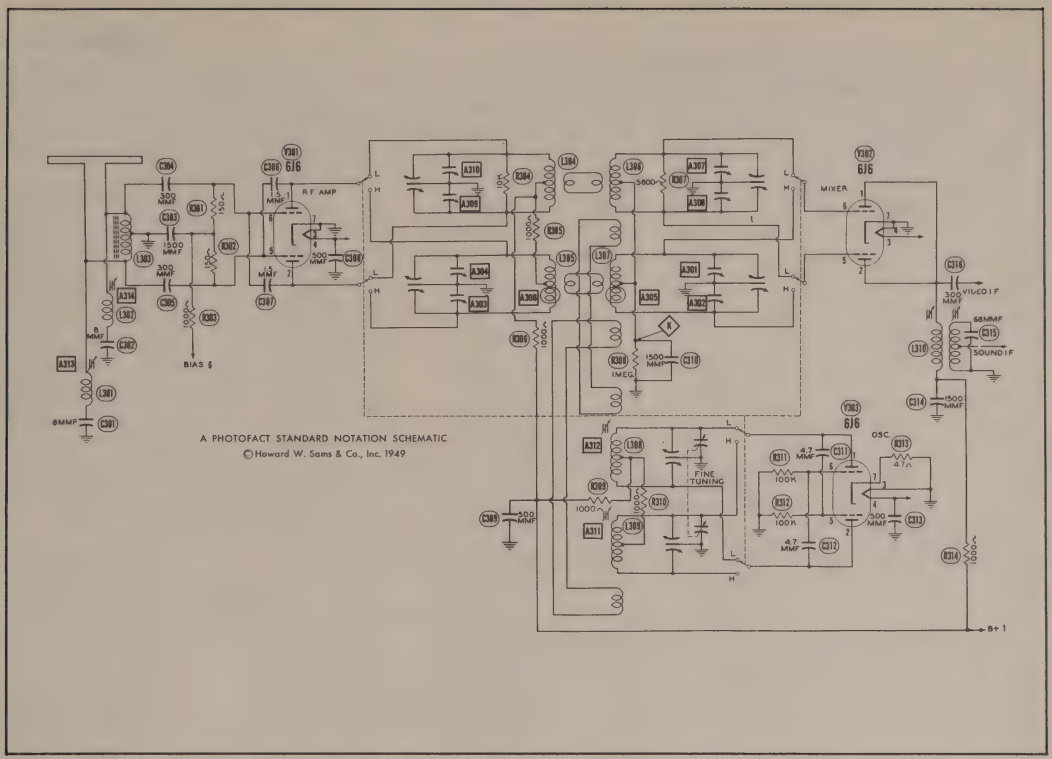
*Measured From Pin 2 of V22
†Measured From Pin 6 of V18
‡Measured From Pin 8 of V20

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

MAGNAVOX CHASSIS
CT-214, CT-218, CT-221



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: 6TANDARD REPLACEMENT	RMA BASE TYPE	
V301	RF Amp.	6J6	7BF	
V302	Mixer	6J6	7BF	
V303	Oscillator	6J6	7BF	

CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT	IDENTIFICATION
C301	8		Fixed Trimmer
C302	8		Fixed Trimmer
C303	1500		Bias Filter
C304	300		RF Coupling
C305	300		RF Coupling
C306	1.5		Neutralizing
C307	1.5		Neutralizing
C308	500		Filament Bypass
C309	500		RF Bypass
C310	1500		Mixer Grid Filter
C311	4.7		Osc. Feedback
C312	4.7		Osc. Feedback
C313	500		Filament Bypass
C314	1500		Mixer Decoupling
C315	68		Fixed Trimmer
C316	300		IF Coupling

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	IDENTIFICATION
R301	150Ω	½	RF Grid
R302	150Ω	½	RF Grid
R303	1000Ω	½	Bias Filter
R304	10KΩ	½	RF Coil Shunt
R305	1000Ω	½	RF Plate
R306	1000Ω	½	RF Plate
R307	5600Ω	½	Mixer Coil Shunt
R308	1 Meg	½	Mixer Grid
R309	1000Ω	½	Osc. Plate
R310	1000Ω	½	Osc. Plate
R311	100KΩ	½	Osc. Grid
R312	100KΩ	½	Osc. Grid
R313	47Ω	½	Osc. Cathode
R314	1000Ω	½	Mixer Decoup.

COILS

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	
L301	Interference Trap	0Ω		
L302	Interference Trap	0Ω		
L303	Ant. Input	0Ω		
L304	RF Low Band	0Ω		
L305	RF High Band	0Ω		
L306	Mixer Low Band	0Ω		
L307	Mixer High Band	0Ω		
L308	Osc. Low Band	0Ω		
L309	Osc. High Band	0Ω		
L310	IF Trans.	.2Ω	0Ω	

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MAGNAVOX PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6BH8	6BH8	T9C	
V2	Mixer	6AS7	6AS7	T9C	
V3	Oscillator	6U4	6U4	T9C	
V4	1st Video IF	6AU6	6AU6	T9A	
V5	2nd Video IF	6AU6	6AU6	T9A	
V6	3rd Video IF	6AU6	6AU6	T9A	
V7	4th Video IF	6AU6	6AU6	T9A	
V8	Video Amp.	6BZ7	6BZ7	T9C	
V9	DC Rest.-Sync Clamper	6AL5	6AL5	T9C	
V10	1st Sound IF	6BA6	6BA6	T9A	
V11	2nd Sound IF	6BA6	6BA6	T9A	
V12	Limiter	6AU6	6AU6	T9A	
V13	Discriminator	6AL5	6AL5	T9C	
V14	AF Amp.	6AT6	6AT6	T9C	
V15	Audio Output	6BM8	6BM8	T9C	
V16	Sync. Amp.-Sync Clipper	6BZ7	6BZ7	T9C	
V17	Vert.-Osc.-Vert Output	6BM8	6BM8	T9C	
V18	Hor. AFC-Hor. Osc.	6BZ7	6BZ7	T9C	
V19	Hor. Output	2D21	2D21	T9C	
V20	Damper	1X2	1X2	T9C	
V21	HV Rectifier	1B3GT	1B3GT	T9C	
V22	LV Rectifier	5U4G	5U4G	T9C	
V23	Picture Tube	19BP4	19BP4		

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MAGNAVOX PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	475	270021014					TVL-40	▲ Filter ■ Decoupling
B	10	475				98S			▲ Filter
C	10	475							▲ Vert. Out Plate Dec.
C2A	30	475	270021015			97P6X1		TVL-55	▲ Filter
B	10	475				89P			■ Decoupling
C	10	475							▲ Filter
C3A	30	475	270021016			97P6X1		TVL-18	▲ Filter
B	10	475				89P			▲ Vert. Out. Cath. Byp.
C4A	30	475	270021012	AP44474A		97P6X1		TVL-38	▲ Output Decoupling
B	10	475				1W5			■ Filter
C	30	475							▲ Output Cath. Byp.
C5A	30	475	270021013			97P6X1		TVL-55	▲ Filter
B	10	475				89P			■ Filter
C	10	475							▲ Filter
C6						GP2K-750			RF Coupling
C7						GP2K-750			RF Cathode Bypass
C8						GP2K-750			RF Screen Bypass
C9						GP2K-750			RF Plate Decoupling
C10						GP2K-750			RF Bypass
C11						NP0K-S			RF Coupling " " "
C12						GP1K-25			" " "
C13						GP2L-0015			Osc. Coupling
C14						NP0K-3			Mixer Screen Bypass
C15						GP2K-750			Mixer Plate Decoup.
C16						GP2K-750			Osc. Feedback
C17						GP2K-750			" " "
C18						GP2K-250			RF Bypass
C19									Osc. Fil. Bypass
C20									AGC Filter
C21									IF Coupling
C22	75	500				NP0M-75			Fixed Trimmer
C23				14- 700075					" "
C24	75			14- 700075		NP0M-75			Fixed Trimmer
C25				14- 700075					" "
C26	11.00		26-288546	1468-001	1-1511	GP2L-001	MW.5-21	1FM-21	4th Video IF Decoup.
C27	1.00		26-288545	1468-001	1-1511	GP2L-001	MW.5-21	1FM-21	1st Video IF Decoup.
C28	1.00		26-288545	1468-001	1-1511	GP2L-001	MW.5-21	1FM-21	Decoupling
C29	1.00		26-288545	1468-001	1-1511	GP2K-250	MO.5-325	1FM-325	IF Coupling
C30	43		26-288543	1468-001	1-1511	GP2L-001	MW.5-21	1FM-21	Fixed Trimmer AGC Filter
C31	1.00		26-288545	1468-001	1-1511	GP2L-001	MW.5-21	1FM-21	2nd Video IF Decoup.
C32	1.00		26-288545	1468-001	1-1511	GP2L-001	MW.5-21	1FM-21	Decoupling
C33	1.00		26-288545	1468-001	1-1511	GP2K-250	MO.5-325	1FM-325	IF Coupling
C34	1.00		26-288545	1468-001	1-1511	GP2L-001	MW.5-21	1FM-21	AGC Filter
C35	1.00		26-288545	1468-001	1-1511	GP2L-001	MW.5-21	1FM-21	3rd Video IF Fil. Byp.
C36	1.00		26-288545	1468-001	1-1511	GP2L-001	MW.5-21	1FM-21	3rd Video IF Decoupling
C37	1.00		26-288545	1468-001	1-1511	GP2L-001	MW.5-21	1FM-21	Decoupling
C38	75		26-288575	1468-075	1-1575	GP2K-250	MO.5-325	1FM-325	IF Coupling
C39	75	500	26-288544	1468-075	1-1575	GP1K-75	MOS.5-47	1FM-475	4th Video IF Cath. Byp.
C40	75			14- 700075		NP0M-75			Fixed Trimmer
C41	11.00		26-288546	1468-001	1-1511	GP2L-001	MW.5-21	1FM-21	4th Video IF Decoup.
C42	75		26-288575	1468-075	1-1575	GP2K-250	MO.5-325	1FM-325	IF Coupling
C43	75		26-288544	1468-075	1-1575	NP0K-S	MOS.5-55	MS-55	Fixed Trimmer
C44	75			14- 700075					" "
C45	.36	500	250159092	1468-00681	5W5Q1	GP1K-10	MO.5-41	MS-41	Diode Filter
C46	.36	400	250151284	P488-25	5742F		ST-4-05	TM-15	Video Coupling
C47	.36	400	250151284	P488-25	5742F		ST-6-05	TM-15	" "
C48	.36	600	250151035	P488-35	5742F		ST-6-05	TM-15	" "
C49	.36	400	250151021	P488-25	5742F		ST-4-25	TC-2	Brightness Cont. Byp.
C50	1.00		26-288546	1468-001	1-1511	GP2L-001	MW.5-21	1FM-21	4th Video IF Cath. Bypass
C51	1.00		26-288546	1468-001	1-1511	GP2L-001	MW.5-21	1FM-21	1st S. IF Decoupling
C52	.01	1K	25-151168	1538-01	7-7521	GP2-335-01	ST-6-01	TM-11	2nd S. IF Grid Filter
C53	1.00		26-288546	1468-001	1-1511	GP2L-001	MW.5-21	1FM-21	2nd S. IF Cath. Byp.
C54	1.00		26-288546	1468-001	1-1511	GP2L-001	MW.5-21	1FM-21	2nd S. IF Screen Byp.
C55	1.00		26-288546	1468-001	1-1511	GP2L-001	MW.5-21	1FM-21	2nd S. IF Plate Decoup.
C56	.02		25-151169	1538-02	7-7544	GP1K-50	MO.5-44	1FM-44	Limiter Grid Filter
C57	1.00		26-288546	1468-001	1-1511	GP2L-001	MW.5-21	1FM-21	Limiter Decoupling
C58	27	500	26-288543						RF Bypass
C59	.01	400	25-151021	P488-01	7-7451	GP2-335-01	ST-4-01	TM-11	Audio Coupling
C60	.01	400	25-151021	P488-01	7-7451	GP2-335-01	ST-4-01	TM-11	" "
C61	.033	600	25-151043	P488-03	7-7453	GP2-003	ST-6-003	TM-23	AF Plate Bypass

* Some models use 182MMF in this application.
† Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAGNAVOX PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	±	22007668	D12-1137	M-62-2	Volume control
B	Shaft		Not Req.	A	Not Req.	Attach to R1A Per Instructions
C	Switch		Not Req.	41	SW-A	" " " "
R2A	50KΩ	±	22007607	D11-123	M-44-S	Brightness control
B	Shaft		Not Req.	A	Not Req.	Attach to R2A Per Instructions
R3A	1 Meg.	±	22007602	D11-137	M-61-S	Vert. Hold control
B	Shaft		Not Req.	A	Not Req.	Attach to R3A Per Instructions
R4A	50KΩ	±	22007611	D12-123	M-46-2	Horiz. Hold control
B	Shaft		Not Req.	A	Not Req.	Attach to R4A Per Instructions
R5A	1MΩ	±	22007606	D11-116	M-27-S	Contrast control
B	Shaft		Not Req.	A	Not Req.	Attach to R5A Per Instructions
R6	30Ω	3	22007610		58-30C,TAP	Vert. Centering control tapped @ 15Ω
R7	50Ω	3	22007609	W-30	58-20	Horiz. Centering control
R8	2.2KΩ	4	22007601	W-3000	58-3000	Focus control
R9A	500Ω	1	22007603	D11-114	AW-19-S	Vert. Linearity control
B	500Ω		Not Req.	B	X38-S	Attach to R9A Per Instructions
R10A	2.5 Meg.	±	22007605		N-83-S	Height control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAGNAVOX PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
					All resistors are ± 20% unless otherwise stated.
R11	15Ω	±			Br.-Grn.-Br. RF Decoupling 10%
R12	10KΩ	±			Br.-Blk.-Or. RF Screen "
R13	22KΩ	±		BTS-22K	Red-Red-Or. RF Grid "
R14	15Ω	±			Br.-Grn.-Br. RF Cathode "
R15	47ΩΩ	±			Yl.-Vl.-Red Mixer Coil Shunt "
R16	1 Meg.	±			Br.-Grn.-Grn. Mixer Grid "
R17	47KΩ	±		BTS-47K	Yl.-Vl.-Or. Mixer Screen "
R18	22KΩ	±		BTS-22K	Red-Red-Or. Osc. Grid "
R19	47ΩΩ	±			Yl.-Vl.-Br. Osc. Cathode "
R20	300Ω	±			Blue-Gray-Red Osc. Plate "
R21	1000Ω	±		BTS-1000	Br.-Blk.-Red Mixer Decoupling "
R22	15Ω	±	230048052		Br.-Grn.-Br. Decoupling 10%
R23	10KΩ	±	230048074		Br.-Blk.-Or. 1st Video IF Grid "
R24	33Ω	±	230048045		Or.-White-Blk. 1st Video IF Cathode "
R25	1000Ω	±	230048062	BTS-1000	Br.-Blk.-Red 1st Video IF Decoupling "
R26	1000Ω	±	230048062	BTS-1000	Br.-Blk.-Red Bias Network "
R27	1000Ω	±	230048062	BTS-1000	Br.-Blk.-Red " "
R28	22KΩ	±	230048075	BTS-22K	Red-Red-Or. " "
R29	10KΩ	±	230048074	BTS-10K	Br.-Blk.-Or. " "
R30	82KΩ	±	230048085	BTS-82K	Gray-Red-Or. " "
R31	6.8 Meg.	±	230048088	BTS-6.8 Meg.	Blue-Gray-Grn. " "
R32	1000Ω	±	230048062	BTS-1000	Br.-Blk.-Red " "
R33	10KΩ	±	230048074		Br.-Blk.-Or. 2nd Video IF Grid "
R34	33Ω	±	230048045		Or.-White-Blk. 2nd Video IF Cathode "
R35	1000Ω	±	230048062	BTS-1000	Br.-Blk.-Red 2nd Video IF Decoupling "
R36	150Ω	±	230048052		Br.-Grn.-Br. Decoupling "
R37	15ΩΩ	±	230048058		Br.-Grn.-Br. "
R38	47ΩΩ	±	230048070		Yl.-Vl.-Red 3rd Video IF Grid "
R39	33Ω	±	230048045		Or.-White-Blk. 3rd Video IF Cathode "
R40	27ΩΩ	±	230048067	BTS-2700	Red-Vl.-Red 3rd Video IF Plate "
R41	1000Ω	±	230048062	BTS-1000	Br.-Blk.-Red 3rd Video IF Decoupling "
R42	33Ω	±	230048045		Or.-White-Blk. 4th Video IF Cathode "
R43	56ΩΩ	±	230048071	BTS-5600	Grn.-Blue-Red 4th Video IF Plate "
R44	1000Ω	±	230048062	BTS-1000	Br.-Blk.-Red 4th Video IF Decoupling "
R45	47ΩΩ	±	230048070	BTS-4700	Yl.-Vl.-Red Video Det. Load "
R46	1 Meg.	±	230048031	BTS-1 Meg.	Br.-Blk.-Grn. 1st Video Amp. Grid "
R47	5MΩ	±	230048166		Br.-Blk.-Grn. 1st Video Amp. Plate "
R48	1 Meg.	±	230048031	BTS-1 Meg.	Br.-Blk.-Grn. 2nd Video Amp. Grid "
R49	10ΩΩ	±	230048077		Br.-Blk.-Br. 2nd Video Amp. Cathode "
R50	330Ω	±	230048171	BTS-3300-5%	Or.-Or.-Red Video Amp. Plate 5%
R51	10KΩ	±	230048019	BTS-10K	Br.-Blk.-Or. Picture Tube Grid "
R52	2.2 Meg.	±	230048033	BTS-2.2 Meg.	Red-Red-Grn. DC Restorer Load "
R53	150KΩ	±	230048088	BTS-150K	Br.-Grn.-Yl. Picture Tube Bias Filter 10%
R54	1 Meg.	±	230048031	BTS-1 Meg.	Br.-Blk.-Grn. DC Restorer Load "
R55	47KΩ	±	230048023	BTS-47K	Yl.-Vl.-Or. " "
R56	100Ω	±	230048077		Br.-Blk.-Br. 1st Sound IF Cathode "
R57	220ΩΩ	±	230048015	BTS-2200	Red-Red-Red 1st Sound IF Decoupling "
R58	470KΩ	±	230048029	BTS-470K	Yl.-Vl.-Yl. 2nd Sound IF Grid "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAGNAVOX PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R59	10ΩΩ	±	230048077		Br.-Blk.-Br. 2nd Sound IF Cathode "
R60	680ΩΩ	±	230048418	BTS-6800	Blue-Gray-Red 2nd Sound IF Decoupling "
R61	22KΩ	±	230048418	BTS-22K	Red-Red-Or. 2nd Sound IF Coil Shunt "
R62	1000Ω	±	230048413	BTS-1000	Br.-Blk.-Red 2nd Sound IF Decoupling "
R63	22KΩ	±	230048421	BTS-22K	Red-Red-Or. Limiter Grid "
R64	10KΩ	±	230048419	BTA-10K	Br.-Blk.-Or. Limiter Decoupling "
R65	10KΩ	1	230048419	BTA-10K	Br.-Blk.-Or. Limiter Screen Bleeder "
R66	150KΩ	±	230048425	BTS-100K	Br.-Blk.-Yl. Disc. Load "
R67	100KΩ	±	230048425	BTS-100K	Br.-Blk.-Yl. " "
R68	22KΩ	±	230048421	BTS-22K	Red-Red-Or. De-emphasis "
R69	15 Meg.	±	23-2048256	BTS-15 Meg.	Br.-Grn.-Blue AF Grid "
R70	22MΩ	±	230048425	BTA-220K	Red-Red-Yl. AF Plate 10%
R71	470KΩ	±	230048429	BTS-470K	Yl.-Vl.-Yl. Output Grid 10%
R72	82ΩΩ	2	230048501	BW-2-820	Gray-Red-Br. Output Cathode "
R73	150ΩΩ	2	230048414	BT-2-1500	Br.-Grn.-Red Filter "
R74	1 Meg.	±	230048031	BTS-1 Meg.	Br.-Blk.-Grn. Sync. Amp. Grid "
R75	10KΩ	±	230048419	BTA-10K	Br.-Grn.-Or. Sync. Amp. Plate "
R76	3.9 Meg.	±	230048105	BTS-3.9 Meg.	Or.-White-Grn. Sync. Amp. Clipper Grid 10%
R77	680ΩΩ	±	230048416	BTS-6800	Blue-Gray-Red Sync. Clipper Cathode "
R78	22KΩ	±	230048421	BTS-22K	Red-Red-Or. Integrator "
R79	82ΩΩ	2	230048473	BTS-8200	Gray-Red-Red 10%
R80	82ΩΩ	2	230048473	BTS-8200	Gray-Red-Red 10%
R81	1 Meg.	±	230048031	BTS-1 Meg-5%	Br.-Blk.-Grn. Vert. Osc. Grid "
R82	100KΩ	±	230048425	BTS-100K	Br.-Blk.-Yl. Voltage Divider "
R83	4.7 Meg.	±	230048035	BTS-4.7 Meg.	Yl.-Vl.-Grn. " " "
R84	1.5 Meg.	±	230048032	BTS-1.5 Meg.	Br.-Grn.-Grn. Vert. Osc. Plate "
R85	33KΩ	±	230048416	BTS-3300	Or.-Or.-Red Vert. Peaking "
R86	8.2 Meg.	±	230048033	BTS-8.2 Meg.	Gray-Red-Grn. Vert. Output Grid "
R87	560Ω	1	230085059	BTA-560	Grn.-Blue-Br. Vert. Output Cathode 10%
R88	100Ω	1	230085013	BTA-1000	Br.-Blk.-Red Vert. Output Decoupling "
R89	530Ω	2	230086010	BW-2-3300	Or.-Or.-Br. Focus Coil Shunt "
R90	120Ω	2		BW-2-120	Br.-Red-Br. Series Focus Coil "
R91	1040Ω	11	24003507	DNA-1000#	Voltage Divider Tapped @ 520Ω "
R92	330Ω	2	230086022	BT-2-330	Or.-Or.-Or. " " "
R93	33KΩ	2	230086022	BT-2-33K	Or.-Or.-Or. " " "
R94	3MΩ	±	230086124		Or.-Blue-Blk. " " " 5%
R95	22ΩΩ	±	230086069	BW-2-220	Red-Red-Br. " " "
R96	22ΩΩ	2	230086069	BW-2-220	Red-Red-Br. " " "
R97	10ΩΩ	11	230085068	AB-800	" " "
R98	56ΩΩ	±	230089005	BTS-560K-5%	Grn.-Blue-Yl. Horiz. AFC Grid 5%
R99	150ΩΩ	±	230089004	BTS-150K-5%	Br.-Gray-Yl. Horiz. AFC Cathode 5%
R100	18KΩ	±	230089002	BTS-18K-5%	Br.-Gray-Or. Voltage Divider 5%
R101	8200Ω	±	230048073	BTS-8200	Gray-Red-Red AFC Filter 10%
R102	3.3 Meg.	±	230048073	BTS-3.3 Meg.	Or.-Or.-Grn. Voltage Divider 10%
R103	100KΩ	±	230089001	BTA-2-100K	Red-Yl.-Yl. " " 10%
R104	120KΩ	±	230048097	BTS-120K	Br.-Red-Yl. " " 10%
R105	30KΩ-38KΩ	±	230091021		" " 1%
R106	10KΩ	±	230048074	BTS-10K	Br.-Blk.-Or. Horiz. Osc. Coil Shunt 10%
R107	100KΩ	±	230089201		Br.-Blk.-Yl. Horiz. Osc. Grid "
R108	10KΩ	±	230048019	BTS-10K	Br.-Blk.-Or. Filter "
R109	12.2KΩ	2	230089003	BT-2-120K	Br.-Red-Yl. Horiz. Osc. Plate 10%
R110	150KΩ	±	230048026	BTS-150K	Br.-Grn.-Yl. Feedback Network "
R111	1KΩ	*	230048126		Yl.-Or.-Blk. Parasitic Suppressor 5%
R112	1 Meg.	±	230048031	BTS-1 Meg.	Br.-Blk.-Grn. Horiz. Output Grid "
R113	82ΩΩ	±	230086049		Gray-Red-Blk. Horiz. Output Cathode 10%
R114	47ΩΩ	2	230086017	BT-2-4700	Yl.-Vl.-Red Voltage Dropping "
R115	56KΩ	±	230048083	BTS-56K	Grn.-Blue-Or. Filter 10%
R116	560KΩ	±	230089095	BTS-560K	Grn.-Blue-Yl. Feedback Network 10%
R117	1 Meg.	±	230085031		Br.-Blk.-Grn. HV Filter "
R118	4.7 Meg.	±	230048035	BTS-4.7 Meg.	Yl.-Vl.-Grn. Bias Network "

Set slider at center point.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: MAGNAVOX PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.
T1	117VAC	250VCT @ 2.0A	5VAC @ 3A	5VAC @ 2A	30004501	P-9153	TF-365	P-3059
		@ 244VCT @ 6.2VAC @ 7.6A						

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: MAGNAVOX PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	NOTES
T2	125Ω Tap. @ 90Ω		36033701				Hor. Syncro-Guide Trans.
T3	170Ω	14000	33002501	A-9121	TS0-1	A-4000	Vert. Blank Osc. Trans.
T4	410Ω Tap. @ 170Ω	880Ω @ 7.5Ω 185Ω @ 2.5Ω	32002801	A-8117	TF8-1		Hor. Output Trans.
T5	570Ω	6.7Ω	32002401	A-8115	TS0-1	A-3035	Vert. Output Trans.
T6A	140			DY-1			Hor. Deflection Yoke
B	62Ω						Vert. "
T7	365Ω		36034101				Focus Coil

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MAGNAVOX PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
T8	9.8KΩ	9.8Ω	410Ω	.22Ω	32002701	A-5852	HO-16	A-2904	

SPEAKER

ITEM No.	RATING: FIELD RES.	RATING: V. C. IMP.	REPLACEMENT DATA: MAGNAVOX PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	PM	3.2Ω		ST-117 SOU-58-7	8A31	
	CONE DIA.	V. C. DIA.				
SP2	7 1/4"	1"				

RESISTORS

ITEM No.	RATING	REPLACEMENT DATA: MAGNAVOX PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
RS2	10ΩΩ	230048407		Br.-Blk.-Br. 2nd Sound IF Cathode
RS4	680ΩΩ	230048418	BTS-6800	Blue-Gray-Red 2nd Sound IF Decoupling
RS1	22KΩ	230048418	BTS-22K	Red-Red-Or. 2nd Sound IF Coil Shunt
RS3	1000Ω	230048413	BTS-1000	Br.-Blk.-Red 2nd Sound IF Decoupling
RS5	22KΩ	230048421	BTS-22K	Red-Red-Or. Limiter Grid
RS6	10KΩ	230048419	BTA-10K	Br.-Blk.-Or. Limiter Decoupling
RS8	10KΩ	230048419	BTA-10K	Br.-Blk.-Or. Limiter Screen Bleeder
RS9	150KΩ	230048425	BTS-100K	Br.-Blk.-Yl. Disc. Load
RS7	100KΩ	230048425	BTS-100K	Br.-Blk.-Yl. " "
RS10	22KΩ	230048421	BTS-22K	Red-Red-Or. De-emphasis
RS11	15 Meg.	23-2048256	BTS-15 Meg.	Br.-Grn.-Blue AF Grid
RS12	22MΩ	230048425	BTA-220K	Red-Red-Yl. AF Plate 10%
RS13	470KΩ	230048429	BTS-470K	Yl.-Vl.-Yl. Output Grid 10%
RS14	82ΩΩ	230048501	BW-2-820	Gray-Red-Br. Output Cathode "
RS15	150ΩΩ	230086014	BT-2-1500	Br.-Grn.-Red Filter "
RS16	1 Meg.	230048031	BTS-1 Meg.	Br.-Blk.-Grn. Sync. Amp. Grid "
RS17	10KΩ	230048419	BTA-10K	Br.-Grn.-Or. Sync. Amp. Plate "
RS18	3.9 Meg.	230048105	BTS-3.9 Meg.	Or.-White-Grn. Sync. Amp. Clipper Grid 10%
RS19	680ΩΩ	230048416	BTS-6800	Blue-Gray-Red Sync. Clipper Cathode "
RS20	22KΩ	230048421	BTS-22K	Red-Red-Or. Integrator "
RS21	82ΩΩ	230048473	BTS-8200	Gray-Red-Red 10%
RS22	82ΩΩ	230048473	BTS-8200	Gray-Red-Red 10%
RS23	1 Meg-5%	230048231	BTS-1 Meg-5%	Br.-Blk.-Grn. Vert. Osc. Grid "
RS24	100KΩ	230048425	BTS-100K	Br.-Blk.-Yl. Voltage Divider "
RS25	4.7 Meg.	230048035	BTS-4.7 Meg.	Yl.-Vl.-Grn. " " "
RS26	1.5 Meg.	230048032	BTS-1.5 Meg.	Br.-Grn.-Grn. Vert. Osc. Plate "
RS27	33KΩ	230048416	BTS-3300	Or.-Or.-Red Vert. Peaking "
RS28	8.2 Meg.	230048033	BTS-8.2 Meg.	Gray-Red-Grn. Vert. Output Grid "
RS29	560Ω	230085059	BTA-560	Grn.-Blue-Br. Vert. Output Cathode 10%
RS30	100Ω	230085013	BTA-1000	Br.-Blk.-Red Vert. Output Decoupling "
RS31	530Ω	230086010	BW-2-3300	Or.-Or.-Br. Focus Coil Shunt "
RS32	120Ω	230086012	BW-2-120	Br.-Red-Br. Series Focus Coil "
RS33	1040Ω	24003507	DNA-1000#	Voltage Divider Tapped @ 520Ω "
RS34	330Ω	230086022	BT-2-330	Or.-Or.-Or. " " "
RS35	33KΩ	230086022	BT-2-33K	Or.-Or.-Or. " " "
RS36	3MΩ	230086124		Or.-Blue-Blk. " " " 5%
RS37	22ΩΩ	230086069	BW-2-220	Red-Red-Br. " " "
RS38	22ΩΩ	230086069	BW-2-220	Red-Red-Br. " " "
RS39	10ΩΩ	230085068	AB-800	" " "
RS40	56ΩΩ	230089005	BTS-560K-5%	Grn.-Blue-Yl. Horiz. AFC Grid 5%
RS41	150ΩΩ	230089004	BTS-150K-5%	Br.-Gray-Yl. Horiz. AFC Cathode 5%
RS42	18KΩ	230089002	BTS-18K-5%	Br.-Gray-Or. Voltage Divider 5%
RS43	8200Ω	230048073	BTS-8200	Gray-Red-Red AFC Filter 10%
RS44	3.3 Meg.	230048073	BTS-3.3 Meg.	Or.-Or.-Grn. Voltage Divider 10%
RS45	100KΩ	230089001	BTA-2-100K	Red-Yl.-Yl. " " 10%
RS46	120KΩ	230048097	BTS-120K	Br.-Red-Yl. " " 10%
RS47	30KΩ-38KΩ	230091021		" " 1%
RS48	10KΩ	230048074	BTS-10K	Br.-Blk.-Or. Horiz. Osc. Coil Shunt 10%
RS49	100KΩ	230089201		Br.-Blk.-Yl. Horiz. Osc. Grid "
RS50	10KΩ	230048019	BTS-10K	Br.-Blk.-Or. Filter "
RS51	12.2KΩ	230089003	BT-2-120K	Br.-Red-Yl. Horiz. Osc. Plate 10%
RS52	150KΩ	230048026	BTS-150K	Br.-Grn.-Yl. Feedback Network "
RS53	1KΩ	230048126		Yl.-Or.-Blk. Parasitic Suppressor 5%
RS54	1 Meg.	230048031	BTS-1 Meg.	Br.-Blk.-Grn. Horiz. Output Grid "
RS55	82ΩΩ	230086049		Gray-Red-Blk. Horiz. Output Cathode 10%
RS56	47ΩΩ	230086017	BT-2-4700	Yl.-Vl.-Red Voltage Dropping "
RS57	56KΩ	230048083	BTS-56K	Grn.-Blue-Or. Filter 10%
RS58	560KΩ	230089095	BTS-560K	Grn.-Blue-Yl. Feedback Network 10%
RS59	1 Meg.	230085031		Br.-Blk.-Grn. HV Filter "
RS60	4.7 Meg.	230048035	BTS-4.7 Meg.	Yl.-Vl.-Grn. Bias Network "

MAGNAVOX CHASSIS CT-214, CT-218, CT-221

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ma)	MAGNAVOX PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
L1	.240A	60Ω	1.6Henry	360340G1	C-1703*		C-2991*	* Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	MAGNAVOX PART No.	MEISSNER PART No.	
L2	Ant. Input	0Ω				Part of Tuner Assembly
L3	Ant. Input	0Ω				" " " "
L4	Ant. Input	0Ω				" " " "
L5	Fil. Choke	0Ω				
L6	1st Video & IF Sound Trap	0Ω	0Ω			" " " "
L7	2nd Video IF	.2Ω		360332G3		
L8	3rd Video IF	.2Ω	0Ω	360332G5		
L9	Fil. Choke	0Ω		360332G11		
L10	Fil. Choke	0Ω		360332G11		
L11	4th Video IF	.2Ω		360332G6		
L12	4th Video Cath. Coil	.2Ω		360332G4		
L13	5th Video IF	.2Ω		360332G4		
L14	Peaking	7.5Ω		360332G9		Wound on 39KΩ resistor
L15	Peaking	7.5Ω		360332G10		
L16	Peaking	7.5Ω				
L17	Peaking	5Ω		360332G7		Wound on 22KΩ resistor
L18	Peaking	4.8Ω		360332G8		
L19	Peaking	4Ω		360332G8		
L20	1st Sound IF	.1Ω	.1Ω	360332G12		
L21	2nd Sound IF	.1Ω	.1Ω	360332G12		
L22	Sound Disc. XFMR.	.1Ω	.1Ω	360332G13		
L23	Horiz.Speed	45Ω				
L24	Horiz. Linearity	36Ω		360334G1		

MISCELLANEOUS

ITEM No.	PART NAME	MAGNAVOX PART No.	NOTES
M1	RF Tuner Assembly	70031SG1	(RCA Tuner)
M2	Fuse		5 Amp.
M3	Video Det. Crystal		Sylvania 1N34
M4	Pushbutton Switch	160192G1	AC Interlock
	Connector	180441G1	Picture Tube
M5	Ion Trap		

CIRCUIT MODIFICATIONS

The schematic on page 2 conforms to the CT218A chassis. This chassis is identical to the CT221A and CT214C except for the tuners used. The following changes have been made which account for variations from this schematic.

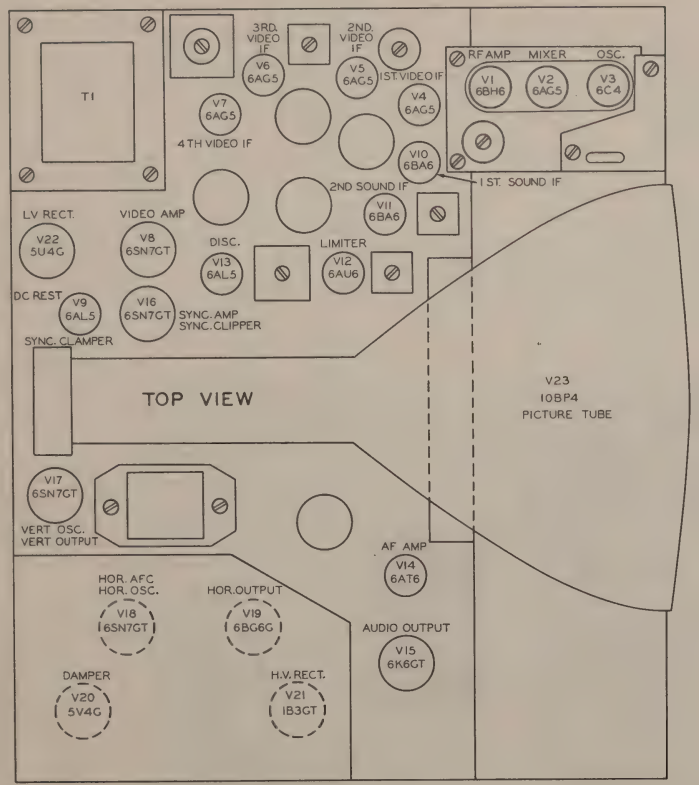
CT214A. This chassis does not incorporate the video peaking coil L16. Also the horizontal speed coil L23 was not used. C65 was 120MMF and C91 was a variable trimmer which was the horizontal speed control. The fixed trimmer C90 and R118 were also not used.

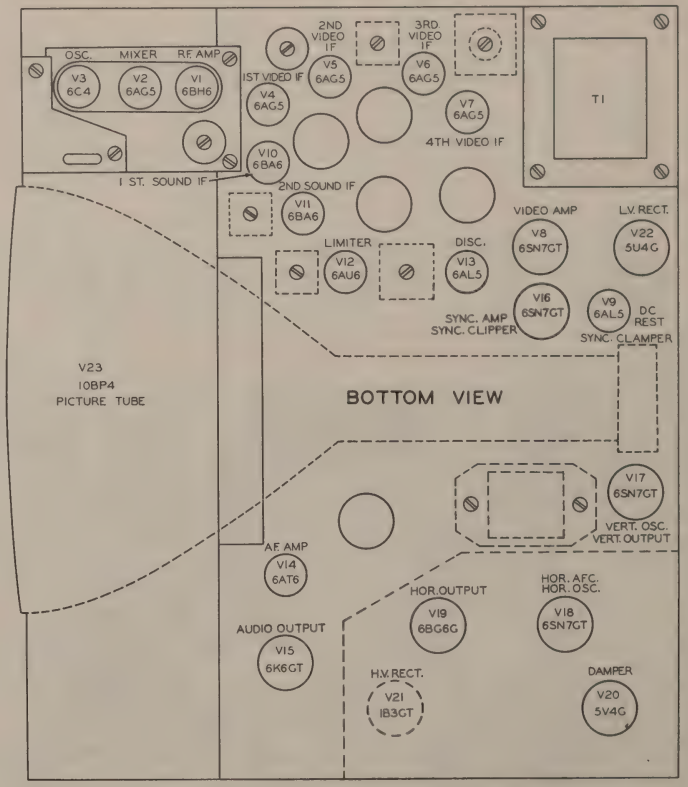
CT214B. This chassis is electrically identical to the CT218A schematic on page 2 except for the tuner.

CT214D, CT218B, CT221B. On these chassis the Audio output cathode bypass section of C4 is not used. Instead a separate 20MFD, 150V capacitor is connected between the output cathode and chassis. The positive terminal is connected to chassis. The negative terminal of C4 is returned to ground instead of the -85 volt line. C4B is connected in parallel with C4A. C5C is connected in the circuit where C4B was removed.

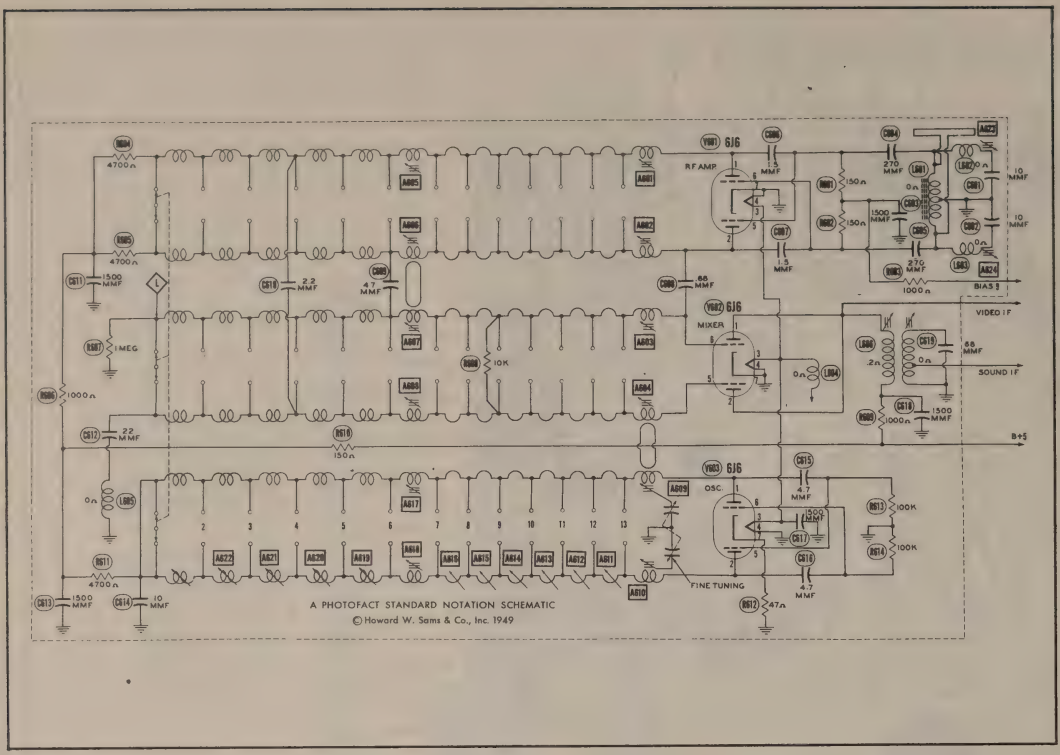
HORIZONTAL SPEED AND LINEARITY ADJUSTMENTS

1. Set the horizontal "Drive" (B1) "Speed" (B2) and "Lock"(B3) controls to approximately 3/4 turn from the tight position. Do not force the tight adjustment to determine this setting.
2. With a test pattern being received and the horizontal "Hold" control at the full counter-clockwise position, turn the "Speed" adjustment (B2) until picture "syncs" in.
3. Turn the "Drive" adjustment (B1) until best linearity is obtained and the picture fills the mask.
4. Turn channel selector switch to an unused channel and then back again to the original channel. If the picture fails to "sync", reset the "Lock" control adjustment (B3) 1/4 turn counter-clockwise. Turn the "Speed" adjustment (B2) until picture "syncs" in.
5. After the adjustments have been made above so the picture "syncs" after the signal is interrupted, turn the horizontal "Hold" control clockwise to the point where the picture begins to drop out of "sync". Back the control slightly and interrupt the signal. The picture should lock in at this point which is approximately 60% of the rotation of the horizontal "Hold" control.
6. If syncronization cannot be obtained, set the horizontal "Speed" adjustment (B2) to its mid-setting and adjust B4 (course sync frequency setting) until picture "syncs" in.





TUBE PLACEMENT CHART



PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	
V601	R. F. Amp.	6J6	7BF	
V602	Mixer	6J6	7BF	
V603	Oscillator	6J6	7BF	

CAPACITORS

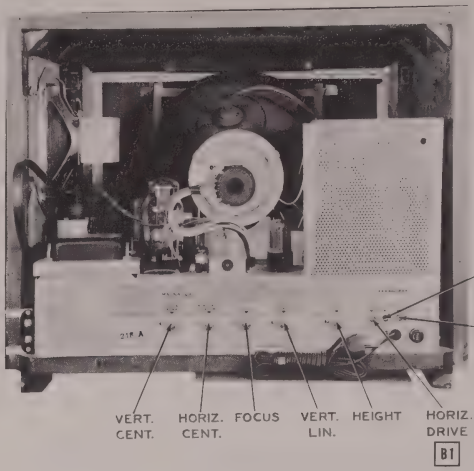
ITEM No.	RATING: CAP.	RATING: VOLT	IDENTIFICATION
C601	10		Fixed Trimmer
C602	10		Fixed Trimmer
C603	1500		RF Bypass
C604	270		RF Coupling
C605	270		RF Coupling
C606	1.5		Neutralizing
C607	1.5		Neutralizing
C608	.68		RF Coupling
C609	4.7		RF Coupling
C610	2.2		RF Coupling
C611	1500		RF Decoupling
C612	22		Fixed Trimmer
C613	1500		Osc. Decoupling
C614	10		Fixed Trimmer
C615	4.7		Osc. Feedback
C616	4.7		Osc. Feedback
C617	1500		Filament Bypass
C618	1500		Mixer Decoupling
C619	68		Fixed Trimmer

RESISTORS

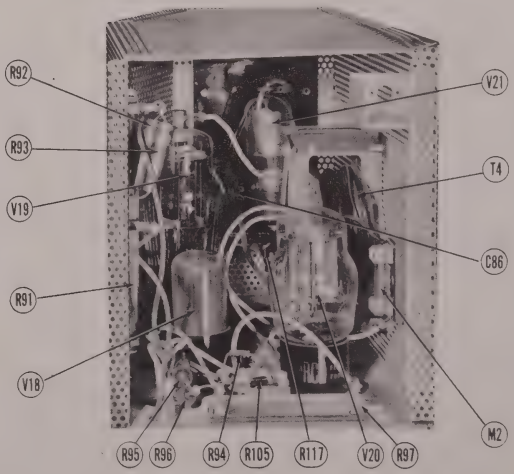
ITEM No.	RATING: RESISTANCE	RATING: WATTS	IDENTIFICATION
R601	150Ω	½	RF Grid
R602	150Ω	½	RF Grid
R603	1000Ω	½	Bias Filter
R604	4700Ω	½	RF Plate
R605	4700Ω	½	RF Plate
R606	1000Ω	½	RF Decoupling
R607	1 Meg.	½	Mixer Grid
R608	10KΩ	½	Mixer Grid Shunt
R609	1000Ω	½	Mixer
R610	150Ω	½	Decoupling
R611	4700Ω	½	Osc. Plate
R612	47Ω	½	Osc. Cathode
R613	100KΩ	½	Osc. Grid
R614	100KΩ	½	Osc. Grid

COILS

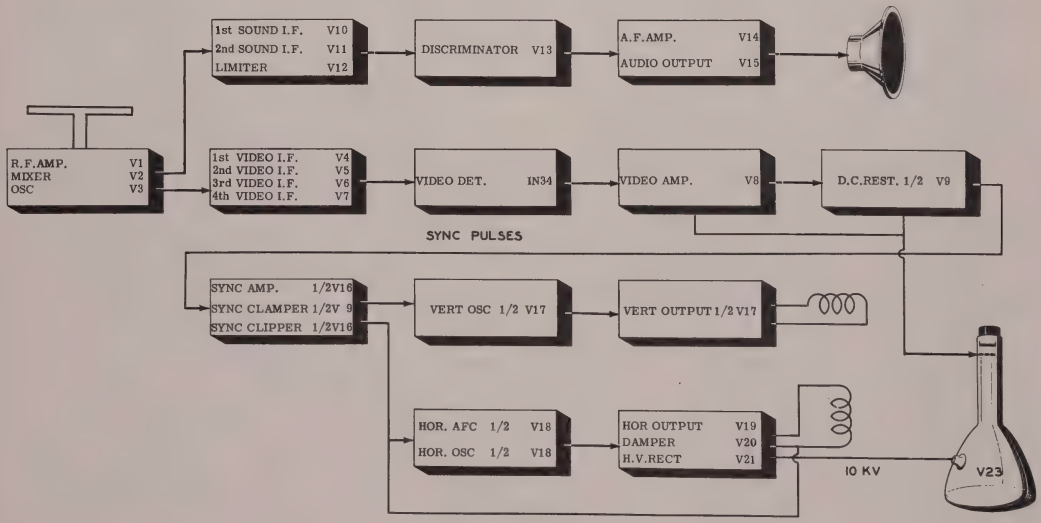
ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	
L601	Ant. Input	0Ω		
L602	Interference Trap	0Ω		
L603	Interference Trap	0Ω		
L604	Filament Choke	0Ω		
L605	Mixer Grid Trap	0Ω		
L606	1st. Video IF and Sound Trap	.22	0Ω	



CABINET-REAR VIEW



HORIZONTAL SWEEP COMPARTMENT



BLOCK DIAGRAM

NATIONAL
MODEL HFS

NATIONAL
MODEL HFS

NATIONAL MODEL HFS

TRADE NAME	National, Model HFS
MANUFACTURER	National Company, Inc., Malden, Mass.
TYPE SET	AC or Battery Operated Multi-Band Superheterodyne Receiver
TUBES(EIGHT)	Types 6AK5 Mixer, 9002 Oscillator, 6SG7 IF Amp., 6SK7 Detector, 6J5 Cathode Follower, 6J5 AF Amp., 6V6GT Power Output, 5Y3GT Rectifier
POWER SUPPLY	110-120, 220-240 Volts AC or 6 Volt Storage Battery
RATING	.36 Amp. @ 117 Volts AC
TUNING RANGE-	Band F 27-42MC, Band E 41-60MC, Band D 56-80MC, Band C 80-120MC, Band B 120-178MC, Band A 178-250MC.

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Connect the high side of the signal generator through .001 MFD shunted by 50KΩ resistor to the grid pin of the first detector coil socket. This will necessitate the removeable of the 1st detector coil from its socket. Connect low side of signal generator to chassis. Pre-set the front panel controls as follows: Audio------To desired volume
Int.-Ext.--Internal
Regeneration--Set for background hiss. (Approx. 4 on Knob Scale)
Absence of the background hiss indicates that the regeneration control and /or the signal generator should be retarded.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.001MFD Shunted by 50KΩ	See Pre-alignment instructions.	10.7MC (400\ Mod	Point of Non-interference	Across voice coil	A1, A2 A3	Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

NATIONAL MODEL HFS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: NATIONAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Mixer	6AK5	6AK5	7HD	
V2	Oscillator	6AL5	6AL5	7TM	
V3	IF Amp.	6SK7	6SK7	8BK	
V4	Detector	6SK7	6SK7	8N	
V5	Cath. Follower	6J5	6J5	6Q	
V6	AF Amp.	6J5	6J5	6Q	
V7	Power Output	6V6GT	6V6GT	7AC	
V8	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: NATIONAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	8	475		E450-8-8-8	UP		D1-3x8-450	TVL-334	Filter
B	8	475			11145C†				"
C	8	475							"
C2	10	50		PRS50/10	BR105		M-10-50	TA-510	Output Cath. Bypass
C3	10	50		PRS50/10	BR105		M-10-50	TA-510	AF Cath. Bypass
C4	100								Fixed Trimmer
C5	100								" "
C6	47			1468-00005	5W5Q5	GP1K-50	M0.5-45	1FM-45	Ant. Coupling
C7	47			1468-00005	5W5Q5	GP1K-50	M0.5-45	1FM-45	" "
C8	50			1468-00005	5W5Q5	GP1K-50	M0.5-45	1FM-45	RF Coupling
C9	50			1468-00005	5W5Q5	GP1K-50	M0.5-45	1FM-45	Mixer Screen Bypass
C10	470	500		1468-0005	5W5T5	GP2K-500	M0.5-35	1FM-35	Mixer Plate Decoup.
C11	50			1468-00005	5W5Q5	GP1K-50	M0.5-45	1FM-45	Osc. Grid Cap.
C12	6200	500		1467-006	1D5D6	GP2-335-0075	MW.5-26	1FM-26	IF Cath. Bypass
C13	470	500		1468-0005	5W5T5	GP2K-500	M0.5-35	1FM-35	IF Screen Bypass
C14	100			1468-0001	5W5T1	GP1K-100	M0.5-31	1FM-31	IF Coupling
C15	47			1468-00005	5W5Q5	GP1K-50	M0.5-45	1FM-45	" "
C16	470	500		1468-0005	5W5T5	GP2K-500	M0.5-35	1FM-35	RF Filter
C17	10000	300		1467-01	1D3S1	GP2-335-01	MW.3-11	1FM-11	" "
C18	6200	500		1467-006	1D5D6	GP2-335-0015	MW.5-26	1FM-26	Det. Plate Bypass
C19	3					NP0K-3			IF Coupling
C20	470	500		1468-0005	5W5T5	GP2K-500	M0.5-35	1FM-35	" "
C21	470	500		1468-0005	5W5T5	GP2K-500	M0.5-35	1FM-35	Cath. Follower Plate
C22	.5	200		430-5	DYR6050		XDMR6-5	TC-5	Det. Plate Decoup.
C23	.1	400		P488-1	GT4P1		ST-4-1	TM-1	Audio Coupling
C24	10000	300		1467-01	1D3S1	GP2-335-01	MW.3-11	1FM-11	RF Bypass

† Omit bypass section.
‡ Install mounting plate.

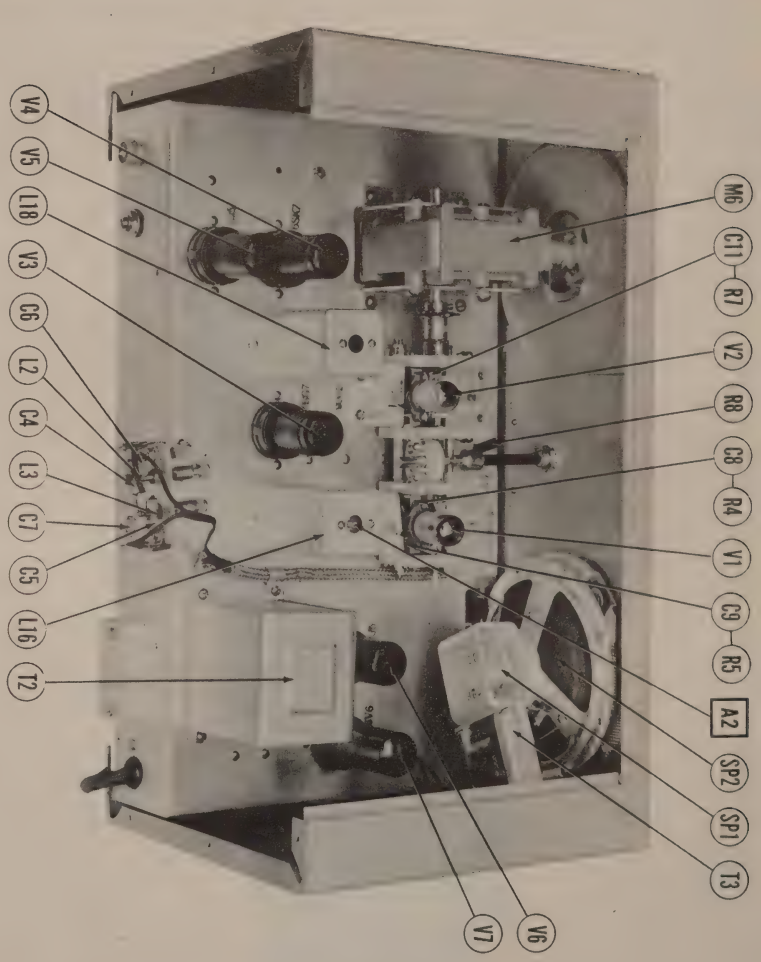
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: NATIONAL PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½		D13-133	M-60-Z	Audio Gain Control
B	Shaft			A	Not Req.	Attach to R1A Per Instructions
R2A	50KΩ	½		D11-123	M-44-S	Regeneration Control
B	Shaft			A	Not Req.	Attach to R2A Per Instructions
R3	1000Ω	½		W-1000	43-1000	Cathode Follower Output Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: NATIONAL PART No.	IRC PART No.	IDENTIFICATION CODES	
R4	270KΩ	½		BTS-270K	Red-Vi.-Yl.	Mixer Grid
R5	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn.	Mixer Screen Decoupling
R6	1000Ω	½		BTS-1000	Br.-Blk.-Red	Mixer Decoupling
R7	47KΩ	½		BTS-47K	Yl.-Vi.-Or.	Osc. Grid
R8	10KΩ	1		BTA-10K	Br.-Blk.-Or.	Osc. Plate Decoupling
R9	220Ω	1		BW-1-220	Red-Red-Br.	IF Cathode
R10	22KΩ	½		BTS-22K	Red-Red-Or.	IF Screen

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	NATIONAL PART No.	IRC PART No.		
R11	47Ω	½		5W-½-47	Yl.-Vl.-Blk.	Det. Feedback
R12	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue	Det. Grid Leak
R13	5,000Ω	½		BTS-4700	Grn.-Blk.-Red	Cathode Follower Plate
R14	470KΩ	½		BTS-470K	Yl.-Vl.-Yl.	Cathode Follower Grid
R15	330Ω	½		BTA-330	Or.-Or.-Br.	Cathode Follower Cathode
R16	150KΩ	1		BTA-150K	Br.-Grn.-Yl.	Voltage Dropping
R17	4700Ω	½		BTS-4700	Yl.-Vl.-Red	AF Cathode
R18	470KΩ	½		BTS-470K	Yl.-Vl.-Yl.	Output Grid
R19	470Ω	2		BT-2-470	Yl.-Vl.-Br.	Output Cathode
R20	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	AF Plate

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	NATIONAL PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
T1	115/230 VAC @ 117VAC .36A	430VAC CT @ .040A	5VAC @ 2A	6.5VAC @ 2.2A	Part of unit 5886			

TRANSFORMER (INTERSTAGE)

ITEM No.	RATING			REPLACEMENT DATA				INSTALLATION NOTES
	TURNS RATIO	DC RES.		NATIONAL PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI. SEC.	PRI.	SEC.					
T2	1 to 3	8.5KΩ	15KΩ				A-2911 #	# Drill new mtg. holes

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		NATIONAL PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T3	5KΩ	3.5Ω	580Ω	.8Ω		A-3877	RO-302	A-2930	

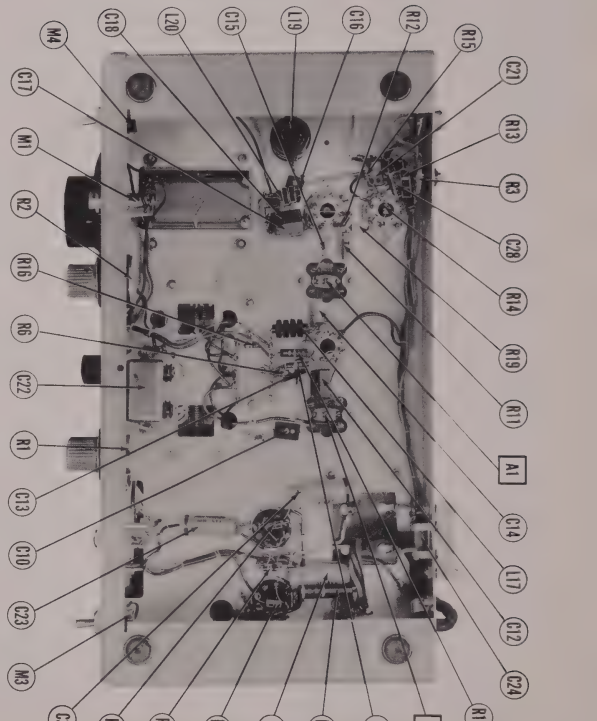
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			NATIONAL PART No.	JENSEN PART No.	QUAM PART No.	
SP1	FIELD PM	V. C. IMP. 3.5Ω		ST-105 MOD. P5-X*	5A1	* Remount output transformer.
SP2	CONE DIA. 4 3/4"	V. C. DIA. 9/16"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (@ CURRENT 1000 ~)	NATIONAL PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
L1	.040A	9200 Tapped @ 4600	17Henry	Part of unit 5886				

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

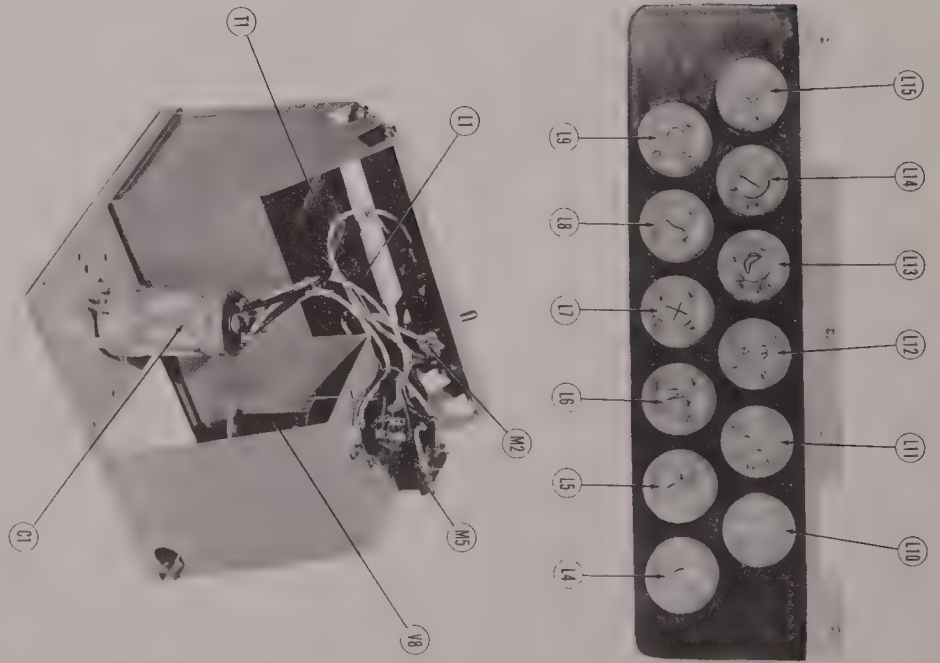
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA NATIONAL PART No.	REPLACEMENT DATA MEISSNER PART No.	
L2	IF Trap	.1Ω				
L3	IF Trap	.1Ω				
L4	Mixer Grid	0Ω	0Ω			Band A
L5	Mixer Grid	0Ω	0Ω			Band B
L6	Mixer Grid	0Ω	0Ω			Band C
L7	Mixer Grid	0Ω	0Ω			Band D
L8	Mixer Grid	0Ω	0Ω			Band E
L9	Mixer Grid	0Ω	0Ω			Band F
L10	Osc. Coil	0ΩCT				Band A Osc. Padder is 125MMF
L11	Osc. Coil	0ΩCT				Band B Osc. Padder is 116MMF
L12	Osc. Coil	0Ω				Band C Osc. Padder is 95MMF
L13	Osc. Coil	0Ω				Band D Osc. Padder is 75MMF
L14	Osc. Coil	0Ω				Band E Osc. Padder is 75MMF
L15	Osc. Coil	0Ω				Band F Osc. Padder is 76MMF
L16	Input IF	0Ω	0Ω	SA3697		
L17	IF Plate Chk.	40Ω				
L18	Output IF	.1Ω		SA4384		
L19	RF Choke	1000Ω				
L20	RF Choke	18Ω				

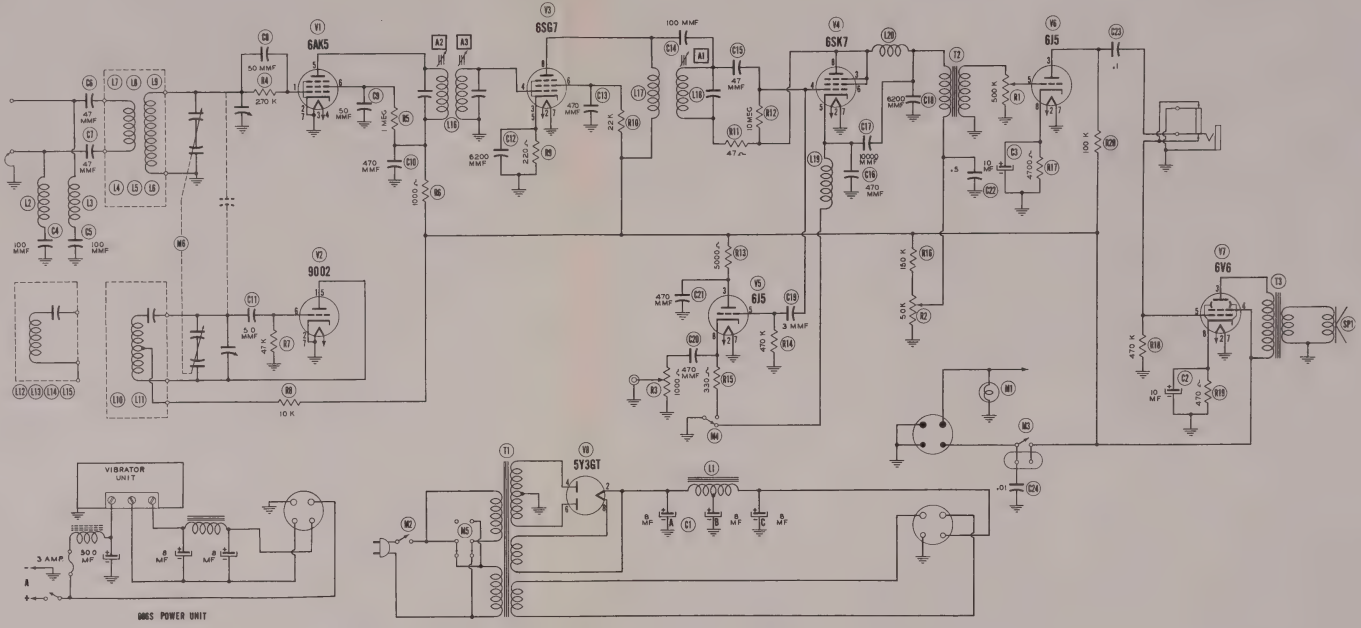
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA NATIONAL PART No.	REPLACEMENT DATA	NOTES
M1	Bayonet	6-8V	0.15A	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	NATIONAL PART No.	NOTES
M2	Switch		Power
M3	Switch		B+
M4	Switch		Internal-External
M5	Switch		115-230V
M6	Tuning Gang		





006S POWER UNIT

IF = 10.7 MC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6AK5	-.5VDC	0V	0V	6.3VAC	175VDC	28VDC	0V	
V 2	9002	135VDC	0V	0V	6.3VAC	135VDC	5-9.8VDC	0V	
V 3	6SG7	0V	6.3VAC	8VDC	0V	8VDC	125VDC	0V	175VDC
V 4	6SK7	0V	6.3VAC	10VDC	.1VDC	.5VDC	10VDC	0V	10VDC
V 5	6J5	0V	0V	130VDC	0V	0V	0V	6.3VAC	8.6VDC
V 6	6J5	0V	0V	88VDC	0V	0V	0V	6.3VAC	4VDC
V 7	6V6GT	0V	6.3VAC	165VDC	180VDC	0V	0V	0V	11VDC
V 8	5Y3GT	0V	280VDC	0V	810VAC	0V	810VAC	0V	280VDC

TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6AK5	270KΩ	0Ω	0Ω	.2K	*2KΩ	1 Meg.	0Ω	
V 2	9002	*10KΩ	0Ω	0Ω	.2Ω	*10KΩ	65KΩ	0Ω	
V 3	6SG7	0Ω	.2Ω	250Ω	0Ω	250Ω	85KΩ	0Ω	*95KΩ
V 4	6SK7	0Ω	.2Ω	58KΩ	10 Meg.	1000Ω	58KΩ	0Ω	58KΩ
V 5	6J5	0Ω	0Ω	*6KΩ	Inf.	54KΩ	Inf.	.2Ω	38KΩ
V 6	6J5	0Ω	0Ω	*100KΩ	Inf.	81Ω	0Ω	.2Ω	4.7KΩ
V 7	6V6GT	0Ω	.2Ω	*150Ω	*900Ω	470KΩ	Inf.	0Ω	470K
V 8	5Y3GT	Inf.	90KΩ	Inf.	280Ω	Inf.	280Ω	Inf.	90KΩ

* Measured from pin 8 of V8

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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OLYMPIC
MODEL RTU-3H

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MODEL RTU-3H

OLYMPIC
MODEL RTU-3H

TRADE NAME	Olympic, Model RTU-3H
MANUFACTURER	Olympic Radio and Tel. Corp., 3101-19 38th Ave., Long Island City, New York
TYPE SET	Television Duplicator
TUBES	Eleven
POWER SUPPLY	105-125 Volts AC, 60 Cycle — RATING 1.39 Amps. @ 117 Volts

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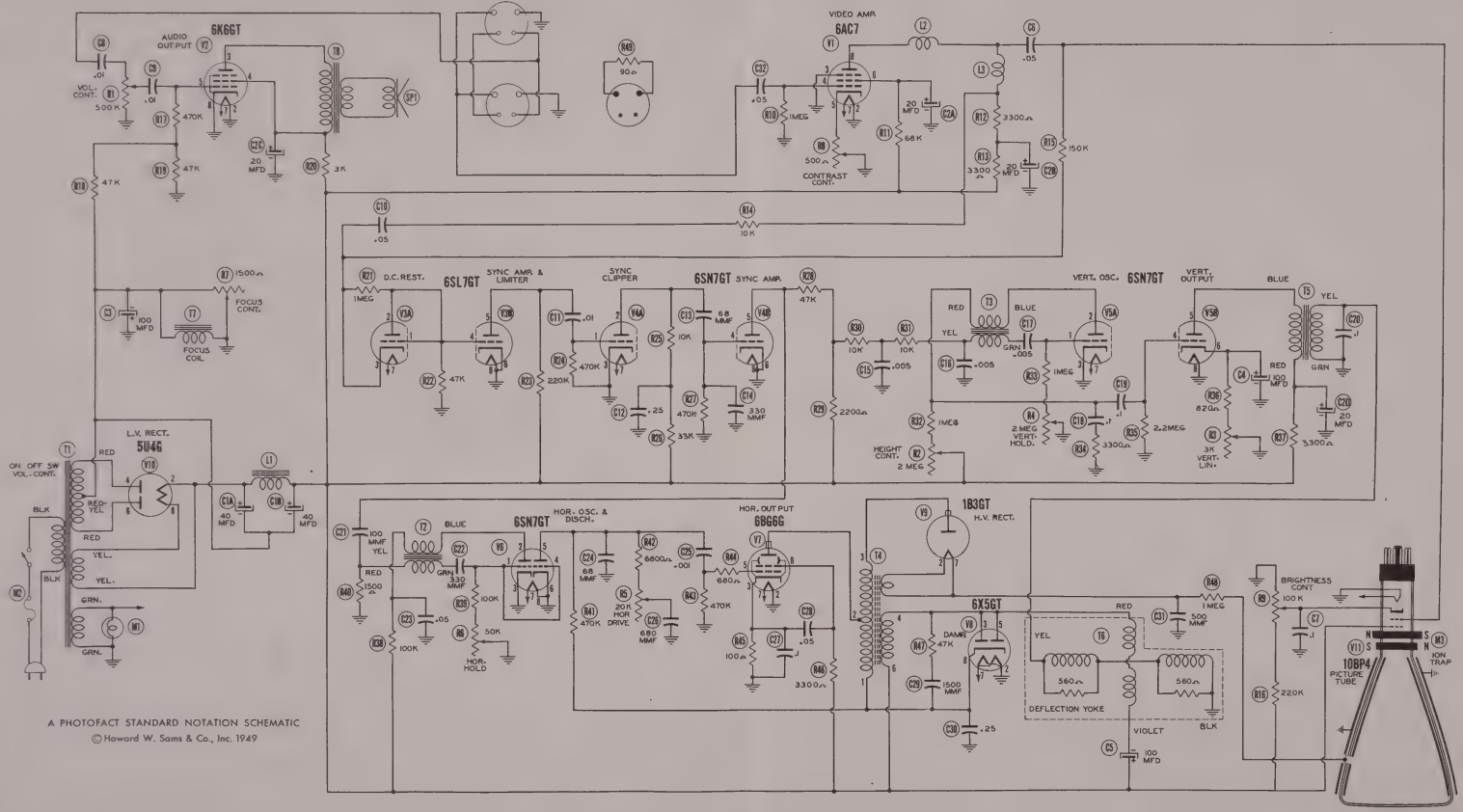
DATE 5/49 4910-15 SET #62 FOLDER 15


6K6GT
AUDIO OUTPUT
VOL. CONT.
500K
470K
47K
25 MFD
3K
VIDEO AMP.
6AC7
IMEG
CONTRAST CONT.
68K
20 MFD
3300Ω
150K
90Ω
47K
1500Ω
FOCUS CONT.
100 MFD
FOCUS COIL
D.C. REST.
6SL7GT
SYNC AMP. & LIMITER
SYNC CLIPPER
6SN7GT
SYNC AMP.
220K
10K
.68 MMF
330 MMF
2200Ω
VERT. OSC.
6SN7GT
VERT. OUTPUT
RED
BLUE
YEL
GRN
820Ω
2.2MEG
3300Ω
3K VERT. LIN.
HEIGHT CONT.
2 MEG
2 MEG VERT. HOLD.
L.V. RECT.
5U4G
ON OFF SW
VOL. CONT.
BLK
RED-YEL
RED
YEL.
GRN.
40 MFD
HOR. OSC. & DISCH.
6SN7GT
HOR. OUTPUT
6BG6G
100 MMF
330 MMF
100K
50K
HOR. HOLD
6800Ω
20K HOR DRIVE
680 MMF
470K
100Ω
1B3GT
H.V. RECT.
6X5GT
DAMP.
1500 MMF
.25
DEFLECTION YOKE
560Ω
VIOLET
100 MFD
1 MEG
500 MMF
BRIGHTNESS CONT
100 K
10BP4
PICTURE TUBE
ION TRAP
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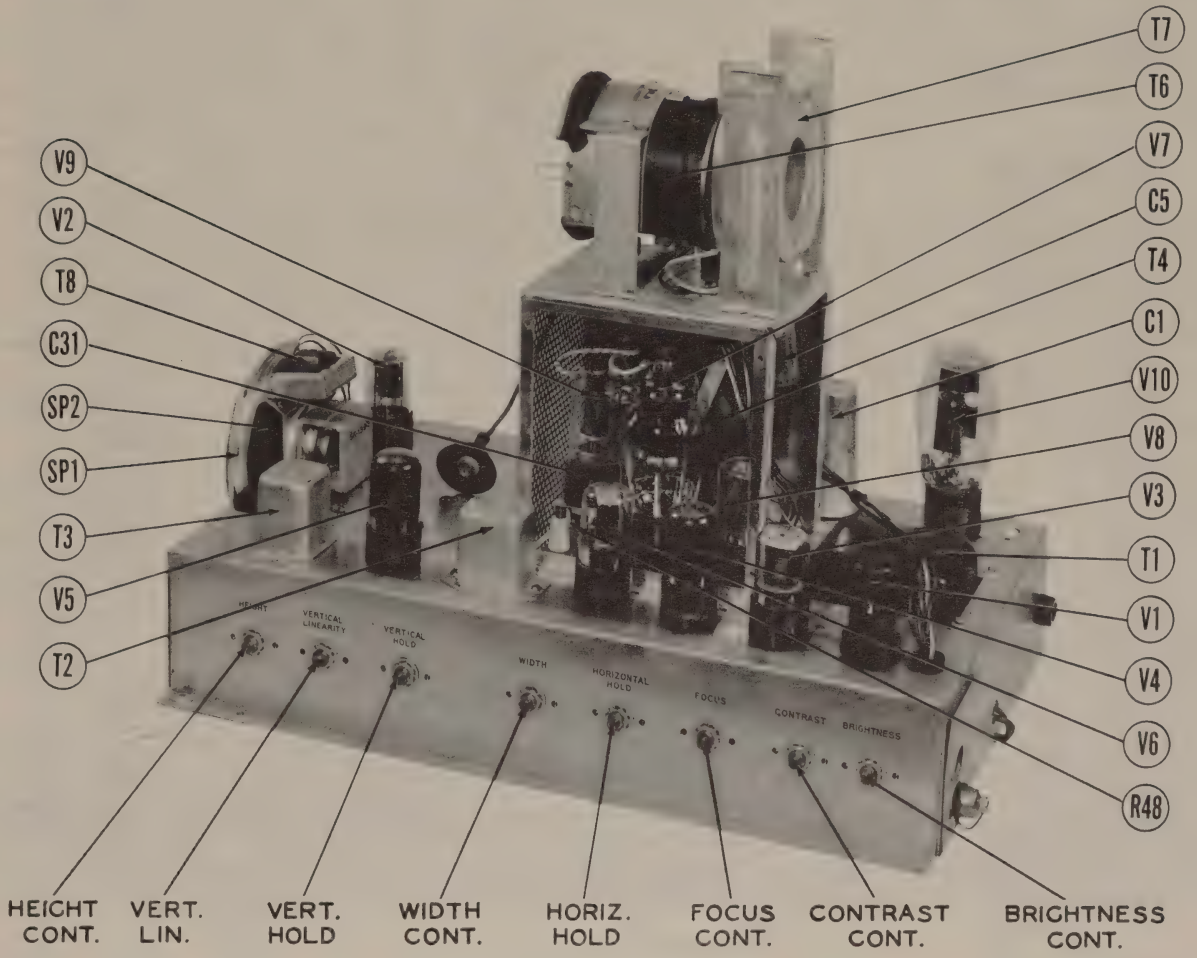
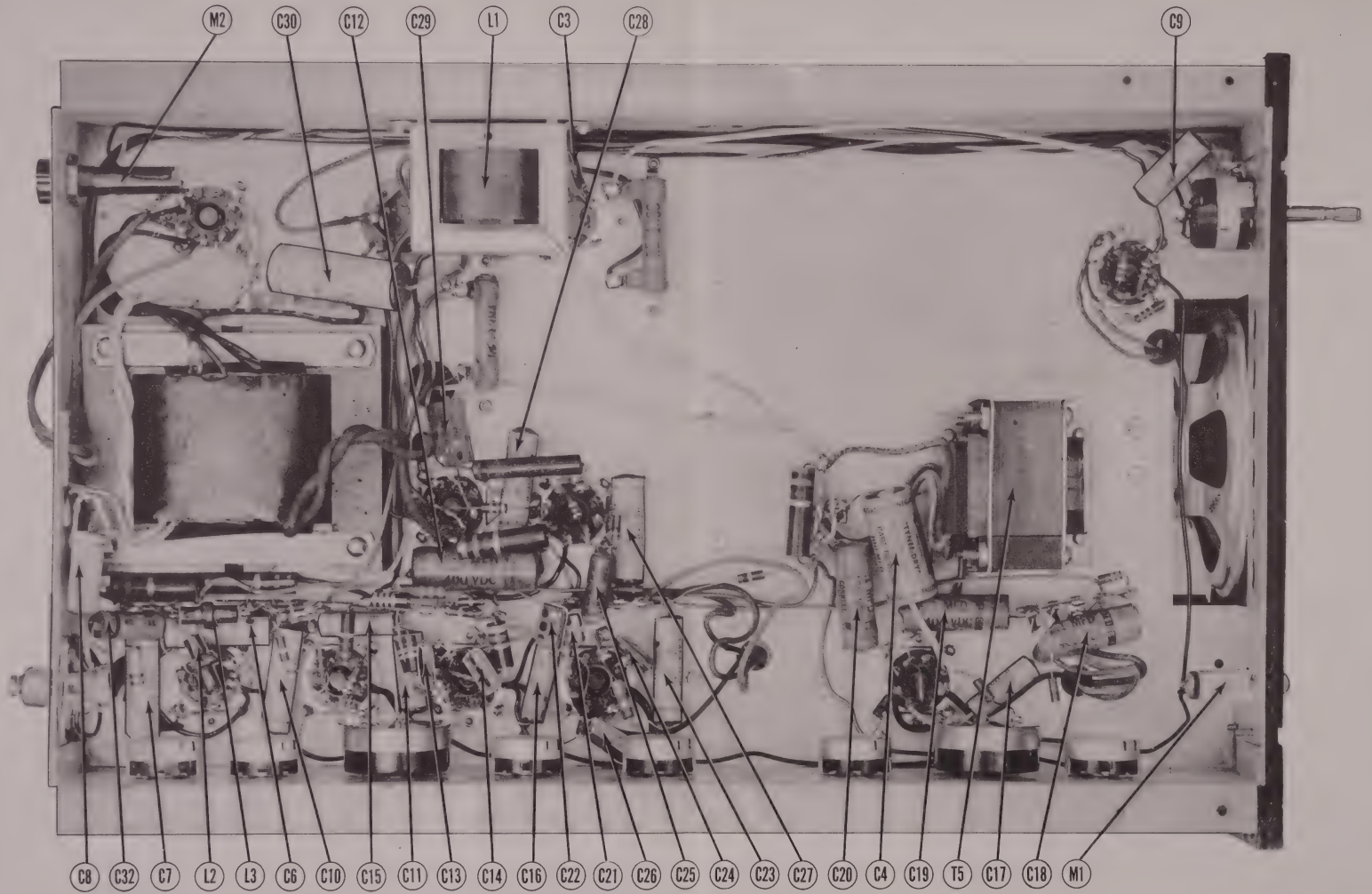
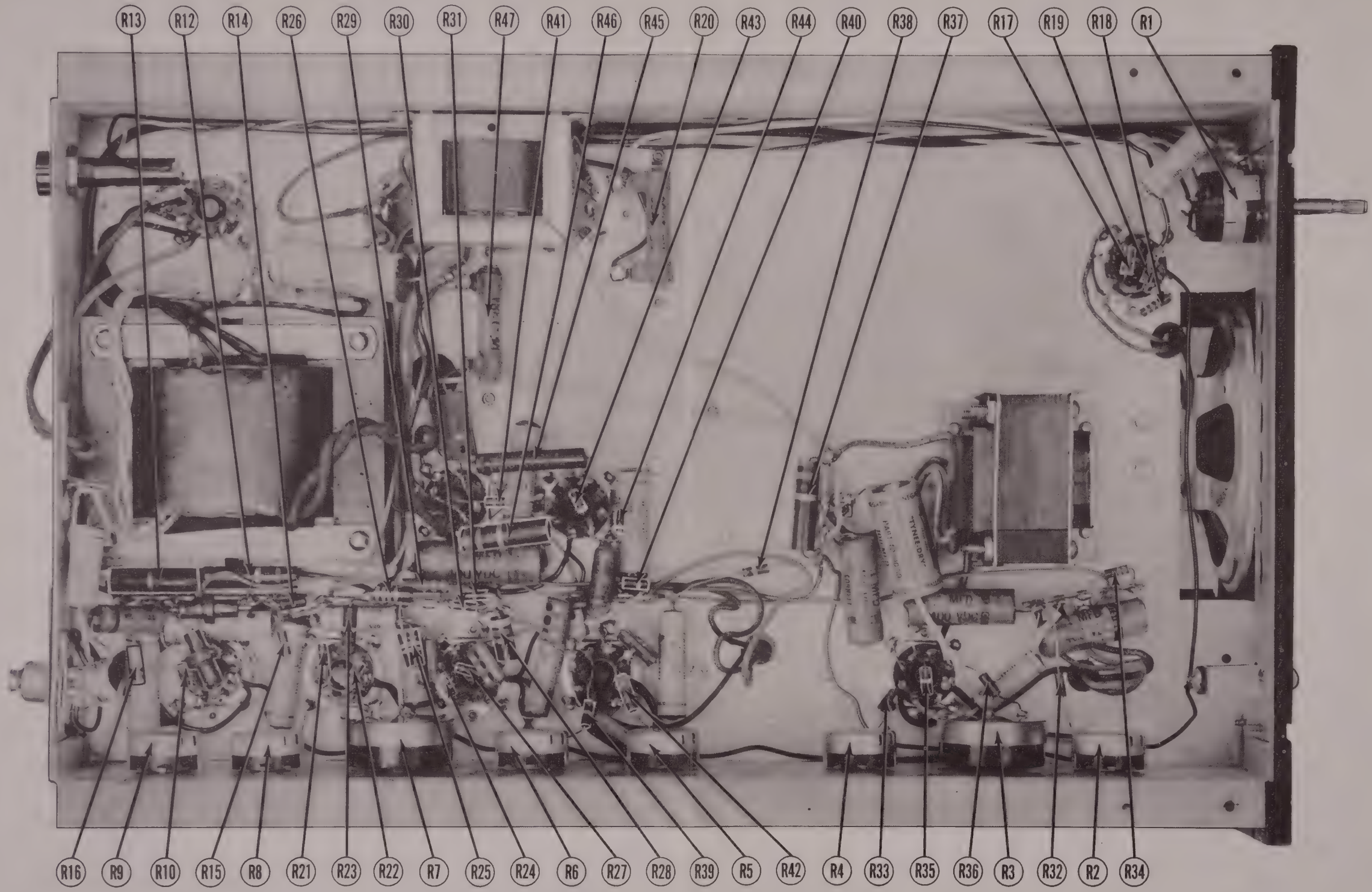


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW – TRANS., INDUCTOR AND CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Video Amp.	6AC7	6AC7	8N	
V2	Audio Output	6K6GT	6K6GT	7S	
V3	DC Restorer-Sync.Amp. & Limiter	6SL7GT	6SL7GT	8BD	
V4	Sync. Clipper-Sync. Amp.	6SN7GT	6SN7GT	8BD	
V5	Vert.Osc.-Vert. Output	6SN7GT	6SN7GT	8BD	
V6	Hor.Osc.& Discharge	6SN7GT	6SN7GT	8BD	
V7	Hor. Output	6BG6G	6BG6G	5BT	
V8	Damper	6X5GT	6X5GT	6S	
V9	HV Rectifier	1B3GT	1B3GT	3C	
V10	LV Rectifier	5U4G	5U4G	5T	
V11	Picture Tube	10BP4	10BP4		

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: OLYMPIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450		AF98J	UF4445			TVL-64	Filter
B	40	450							
C2A	20	450		AF4444J	UF			EL-420	V. Amp. Screen Bypass
B	20	450			222245				Low Pass Filter
C	20	450							B. Output Decoup.
D	20	450							Vert. Output Plate Decoup.
C3	100	50		PRS50/100	BRH501		M-100-50	TVA-17	Bias Filter
C4	100	50		PRS50/100	BRH501		M-100-50	TVA-17	Vert. Output Cath. Byp.
C5	100	50		PRS50/100	BRH501		M-100-50	TVA-17	Hor. Sweep Coupling
C6	.05	400		P488-05	UT435		ST-4-05	TM-15	Video Coupling
C7	.1	200		P288-1	UT2P1		ST-2-1	TM-1	Pic. Tube Cath. Bypass
C8	.01	600		P688-01	UT631	GP2-335-01	ST-6-01	TM-11	Audio Coupling
C9	.01	600		P688-01	UT631	GP2-335-01	ST-6-01	TM-11	"
C10	.05	400		P488-05	UT435		ST-4-05	TM-15	Sync. Coupling
C11	.01	600		P688-01	UT631	GP2-335-01	ST-6-01	TM-11	
C12	.25	400		P488-25	UT425		ST-4-25	TC-2	Sync. Clipper Plate Decoup.
C13	68	500		1468- 000075	5W5Q7	GP1K-75	M0S.5-47	MS-47	Sync. Coupling
C14	330	500		1468-0003	5W5T3	GP2K-300	M0.5-33	MS-33	Voltage Divider
C15	.005	600		P688-005	UT625	GP2M-005	ST-6-005	TM-25	Integrator
C16	.005	600		P688-005	UT625	GP2M-005	ST-6-005	TM-25	
C17	.005	600		P688-005	UT625	GP2M-005	ST-6-005	TM-25	Vert. Osc. Grid Cap.
C18	.1	400		P488-1	UT4P1		ST-4-1	TM-1	Vert. Discharge
C19	.1	400		P488-1	UT4P1		ST-4-1	TM-1	Vert. Coupling
C20	.1	400		P488-1	UT4P1		ST-4-1	TM-1	Vert. Def. Coil Shunt
C21	100	500		1468-0001	5W5T1	GP1K-100	M0.5-31	LFM-31	Differentiator Net *
C22	330	500		1468-0003	5W5T3	GP2K-300	M0.5-33	LFM-33	Hor. Osc. Grid Cap.
C23	.05	400		P488-05	UT435		ST-4-05	TM-15	Hor. Osc. Plate Decoup.
C24	68	500		1468- 000075	5W5Q7	GP1K-75	M0S.5-47	MS-47	Hor. Discharge Plate Byp.
C25	.001	600		1688-001	UT6D1	GP2L-001	ST-6-001	TM-21	Hor. Coupling
C26	680	500			1W577		MW5.5-37	MS-37	Hor. Discharge
C27	.1	200		P288-1	UT2P1		ST-2-1	TM-1	Hor. Output Cath. Byp.
C28	.05	400		P488-05	UT435		ST-4-05	TM-15	Hor. Output Screen Byp.
C29	1500	500		1464-0015	1R5D15		MW5.5- 215		Hor. Damping ± 10%
C30	.25	600		684-25	UT6P25		ST-6-25	TC-2	Damper Filter
C31	500	10000							H. V. Filter Tn. Oxide
C32	.05	200		P288-05	UT235		ST-4-05	TM-15	Video Coupling

* Some models use 68MMF in this application.

CONTROLS

ITEM No.	RATING: RESIST ANCE	RATING: WATTS	REPLACEMENT DATA: OLYMPIC PART No.	CLAROSTAT PART No.	IRC PART No.	NOTES
R1A	500KΩ	½	PT-1194	AM-60-2	D13-133	Volume Control
B	Shaft		Not Req.	KSS-3	E	Attach to R1A Per Instructions
C	Switch		Not Req.	SW-A	41	Attach to R1A Per Instructions
R2A	2 Meg.	½	PT-1197	M-63-S		Height Control
B	Shaft		Not Req.	Not Req.		Attach to R2A Per Instructions
R3	3000Ω	3	PT-1198	58-3K	W-3K	Vert. Linearity Control
R4A	2 Meg.	½	PT-1197	M-63-S		Vert. Hold Control
B	Shaft		Not Req.	Not Req.		Attach to R4A Per Instructions
R5A	20KΩ	½	PT-1196	M-40-S	D11-120	Horiz. Drive Control
B	Shaft		Not Req.	Not Req.	A	Attach to R5A Per Instructions
R6A	50KΩ	½	PT-1198	M-44-S	D11-123	Horiz. Hold Control
B	Shaft		Not Req.	Not Req.	A	Attach to R6A Per Instructions
R7	1500Ω	3	PT-1199	58-1500	W-1500	Focus Control
R8A	500KΩ	½	PT-1201	M-5-S	D11-103	Contrast Control
B	Shaft		Not Req.	Not Req.	A	Attach to R8A Per Instructions
R9A	100KΩ	½	PT-1200	M-49-S	D11-128	Brightness Control
B	Shaft		Not Req.	Not Req.	A	Attach to R9A Per Instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 20% UNLESS OTHERWISE STATED.
R10	1 Meg.	½		BTS-1 Mtg.	Br.-Blk.-Grn. Video Amp. Grid
11	68KΩ	1		BTA-68K	Blue-Gray-Or. Video Amp. Screen Decoupling
12	3300Ω	2		BT-2-3300	Or.-Or.-Red Video Amp. Plate 10%
13	3300Ω	2		BT-2-3300	Or.-Or.-Red Video Amp. Plate 10%
14	10KΩ	½		BTS-10K	Br.-Blk.-Or. Phase Correction
15	150KΩ	½		BTS-150K	Br.-Grn.-Yl. Picture Tube Grid
16	220KΩ	½		BTS-220K	Red-Red-Yl. Voltage Divider
17	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
18	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Bias Voltage Divider
19	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Bias Voltage Divider
20	3KΩ	10		AS-3K	Filter
21	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. DC Restorer Load
22	47KΩ	½		BTS-47K	Yl.-Vi.-Or. DC Restorer Load
23	220KΩ	1		BTA-220K	Red-Red-Yl. Sync. Amp. Plate
24	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Sync. Clipper Grid
25	10KΩ	1		BTA-10K	Br.-Blk.-Or. Sync. Clipper Plate See Note
26	33KΩ	1		BTA-33K	Or.-Or.-Or. Sync. Clipper Decoupling
27	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Sync. Amp. Grid
28	47KΩ	2		BT-2-47K	Yl.-Vi.-Or. Sync. Amp. Plate
29	220KΩ	1		BTA-220K	Red-Red-Red Sync. Amp. Plate
30	10KΩ	½		BTS-10K	Br.-Blk.-Or. Integrator Network
31	10KΩ	½		BTS-10K	Br.-Blk.-Or. Integrator Network
32	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Vert. Osc. Plate
33	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Vert. Osc. Grid
34	33KΩ	½		BTS-33KΩ	Or.-Or.-Red Peaking
35	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. Vert. Output Grid
36	820Ω	½		BTS-820	Gray-Red-Br. Vert. Output Cathode
37	3300Ω	2		BT-2-3300	Or.-Or.-Red Filter 10%
38	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Horiz. Osc. Plate Decoupling
39	100KΩ	½		BTS-10K	Br.-Blk.-Yl. Horiz. Osc. Grid
40	150Ω	½		BTS-150Ω	Br.-Grn.-Red Differentiator
41	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Horiz. Discharge Plate
42	680Ω	½		BTA-680Ω	Blue-Gray-Red Peaking 10%
43	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Horiz. Output Grid
44	68Ω	½			Blue-Gray-Blk. Parasitic Suppressor
45	100Ω	2		BW-2-100	Br.-Blk.-Br. Horiz. Output Cathode
46	3300Ω	2		BT-2-3300	Or.-Or.-Red Horiz. Output Screen Decoupling
47	4KΩ	10		AB-4K	Damper
48	1 Meg.	½		BTA-1 Meg.	Br.-Blk.-Grn. HV Filter
49	90Ω	½			Wh.-Blk.-Blk. Line Termination

Note. Some models use 2 22KΩ 1 Watt resistors in parallel in this application IRC Replacement BTA-22K

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.
T1	117VAC	700VAC CT	5VAC	6.5VAC	TR-1351	P-8314	PH-200	P-8955†
	@ 1.39A		@ 3A	@ 4.6A				
		.200ADC						

† Add series resistor to reduce plate voltage.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE SEC.	RATING: DC RESISTANCE PRI.	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	NOTES
T2	72	2.6Ω		A-8120		A-4002	Hor. Blocking Osc.Tran
T3	165Ω	130Ω		A-8121	T8O-1	A-4000	Vert.Blocking Osc.Tran
T4	3600 Tap	0Ω		A-8117	TF-1		Hor. Output & H.V.Tran
	@ 180Ω	9Ω					
T5	550Ω	6Ω		A-8115	T8O-1	A-3035	Vert.Output Trans.
T6A	14Ω			DT-1			Hor. Deflection Yoke
B	60Ω						Vert Deflection Yoke
T7	240Ω			FC-10			Focus Coil

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
T8	6600Ω	3.42	470Ω	.4Ω		A-3976	RU-302	A-2821	

SPEAKER

ITEM No.	RATING: FIELD	RATING: V. C. IMP.	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	PM	3.42	SK-1393	ST-107 Model PS-X	5A07	
	CONE DIA.	V. C. DIA.				
SP2	4 3/8"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE @ CURRENT 1000 ~/~	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
L1	.200A	55Ω	3Henry		C-2325		C-2591*	*-Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.	SEC.	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: MEISSNER PART No.	NOTES
L2	Peaking Coil	5.6Ω				180 Micro-henries
L3	Peaking Coil	5Ω				115 Micro-henries

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA:	NOTES
M1	Bayonet	6-8V	0.15A	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M2	Fuse		3 Amp.
	Adapter Cable	SA-1552	50 feet long, for following television receivers, Admiral: 20A15, 20A18, Andrea: C-WJ12, T-WJ12 Belmont: 22AZ21, 22AZ22- Clearvibe; Hollywood: Regency Emerson: Model 545, Chassis 120047-Fada:799-U.S.Tele T5Cu,T5C7,T5C8,T5Z1,T5Z5,T5Z0,T5Z1,-RCA 630TS, 648TPK,641TV,8TS30,-Gillfillan: 339-59A-Garod: 3912TVFMP-P59ALD:8T100-Crosley:3C07TA
	Adapter Cable	SA-1553	50 feet long, for following television receiver, Stromberg-Carlson: TV-121M,-Dumont,-Clifton,-Club,-Chatham,Scott:18A-Farnsworth:GV 260-Sight Master:1081,1281,1551,-Emerson:527,Motorola: VK101,-Transvision:?",10",12",15"-
	Adapter Cable	SA-1554	50 feet long, for RCA Television receiver #621
	Adapter Cable	SA-1596	50 feet long, with duplicator plug only
	Interconnecting cable	SA-1555-25	25 feet, used between two duplicators
	Interconnecting cable	SA-1555-50	50 feet, used between two duplicators
	Interconnecting cable	SA-1555-100	100 feet, used between two duplicators

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
V1	6AC7	0V	0V	0V	-.1VDC	0V 3.9VDC	115VDC	6.3VAC	250VDC	
V2	6K6GT	-.1VDC	0V	140VDC	160VDC	-.4VDC	-.2VDC	6.3VAC	0V	
V3	6SL7GT	-.3VDC	-.3VDC	.4VDC	-.3VDC	80VDC	0V	6.3VAC	0V	
V4	6SN7GT	-.3VDC	70VDC	0V	-.6VDC	80VDC	0V	6.3VAC	0V	
V5	6SN7GT	-8.5VDC -15VDC	60VDC 180VDC	0V	0V	300VDC	10VDC 15VDC	6.3VAC	0V	
V6	6SN7GT	-24VDC -26VDC	220VDC	0V	-24VDC -26VDC	110VDC	0V	6.3VAC	0V	
V7	6BG6G	110VDC	0V	10VDC	0V	-.3VDC	-.3VDC	6.3VAC	240VDC	
V8	6X5GT	340VDC	0V	340VDC	0V	340VDC	340VDC	6.3VAC	420VDC	
V9	1B3GT	† Do not measure								
V10	5U4G	0V	350VDC	0V	340VAC	0V	340VAC	0V	350VDC	
V11	10BP4	0V	PIN 10 .2VDC	PIN 11 +56Ω	0Ω	PIN 11 70KΩ	PIN 12 22			

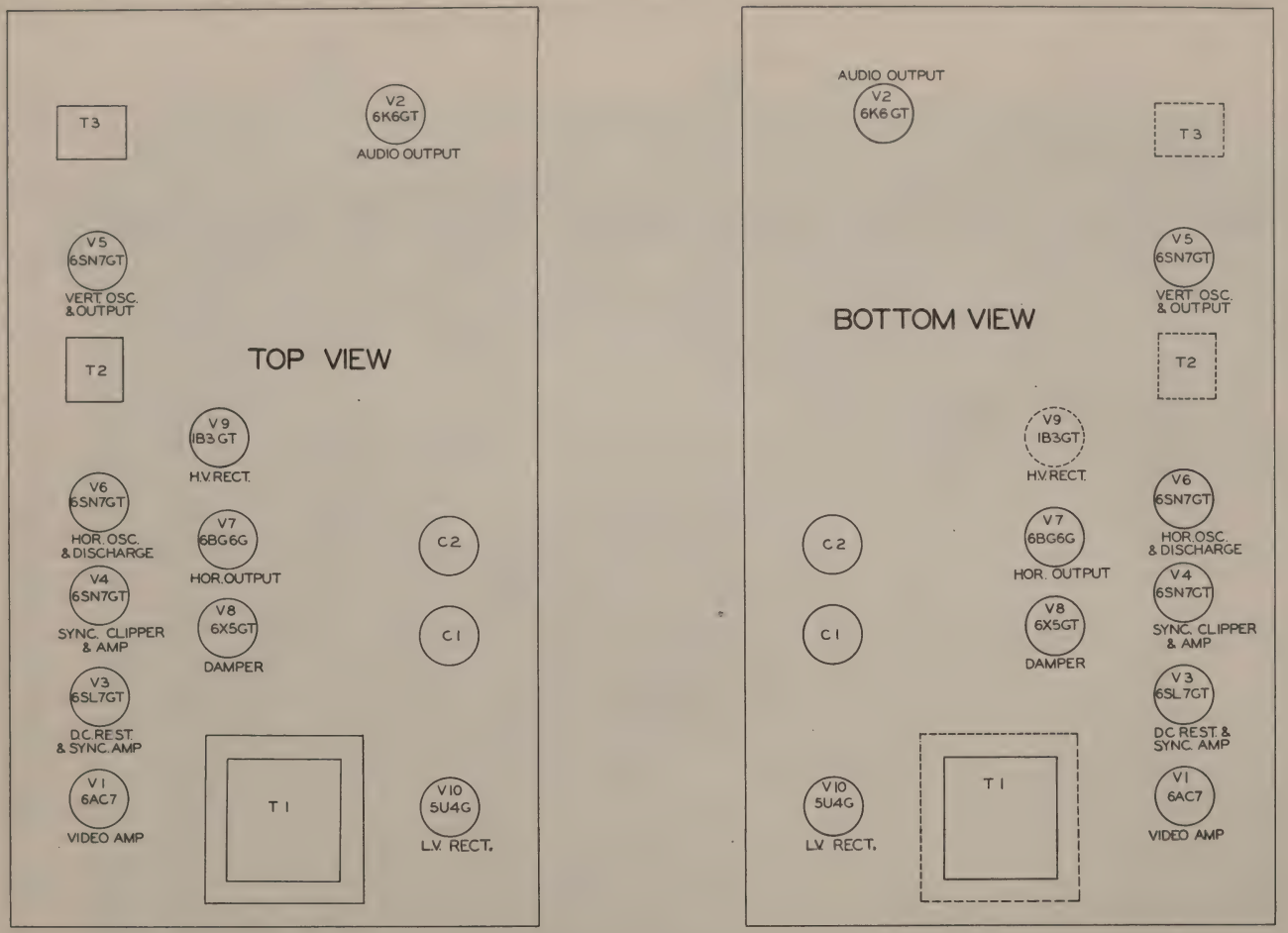
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
V1	6AC7	0Ω	0Ω	1 Meg.	500Ω	0Ω *68KΩ	.2Ω	*65KΩ		
V2	6K6GT	22KΩ	0Ω	*3.3KΩ	*3KΩ	600KΩ	.5Ω	.2Ω	0Ω	
V3	6SL7GT	47KΩ	47KΩ	1.2Meg.	47KΩ	* 220KΩ	0Ω	.2Ω	0Ω	
V4	6SN7GT	470KΩ	*45KΩ	0Ω	1 Meg.	47KΩ	0Ω	.2Ω	0Ω	
V5	6SN7GT	3 Meg. 1 Meg.	*3 Meg. *1 Meg.	0Ω	2.2 Meg.	*4KΩ	3.9KΩ 820Ω	.2Ω	0Ω	
V6	6SN7GT	150KΩ 100KΩ	*100KΩ	0Ω	150KΩ 100KΩ	Inf.	0Ω	.2Ω	0Ω	
V7	6BG6G	Inf.	0Ω	10Ω	Inf.	470KΩ	420KΩ	.2Ω	*3.3KΩ	Inf.
V8	6X5GT	56Ω*	0Ω	70Ω	Inf.	*70Ω	56Ω*	.2Ω	Inf.	
V9	1B3GT		Inf.				Inf.			
V10	5U4G	Inf.	60KΩ	Inf.	50Ω	Inf.	60Ω	Inf.	60KΩ	Inf.
V11	10BP4	0Ω	1.2Meg.	PIN 10 +56Ω	PIN 11 0Ω	PIN 11 70KΩ	PIN 12 22			

* Measured from pin 2 of V10

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panel control set at minimum.
6. Where reading may vary according to the setting of the service controls, both minimum and maximum readings are given.

OLYMPIC MODEL RTU-3H



TUBE PLACEMENT CHART

INSTALLATION

For the installation of a single duplicator unit only one adapter cable is required. If it is desired to install more than one duplicator unit, extension cables are required in addition to the adapter cable. The number required is one less than the number of duplicator units to be used. Extension cables are available in lengths of 25, 50 and 100 feet. Part numbers for these cables are listed in the miscellaneous sections of the parts list. Longer cables can be supplied upon special order.

USE OF ADAPTER CABLES SA-1552, SA-1553 and SA-1554

The receivers with which these cables may be used are listed in the miscellaneous section of the parts list. After selecting the correct cable, identify the Audio Output tube and the video output tube. Remove these tubes from their sockets. Insert the adapter marked "Audio" in the audio output tube socket and insert tube in the adapter. Follow same procedure for "Video" adapter.

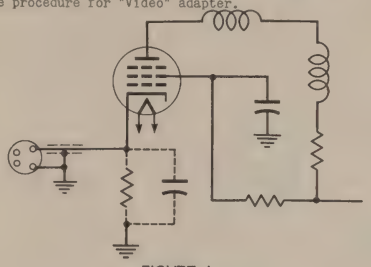


FIGURE 1

Insert the other end of the cable, which has a four prong plug, in the 4 prong socket located in the lower left corner in the rear of the duplicator unit (top socket). If only one duplicator is to be used make sure the terminating plug is inserted in the lower 4 prong socket. If more than one duplicator units is to be used, remove the terminating plug and insert one end of an extension cable into this socket. The other end of the cable is to be inserted in the top socket of the second unit. In this fashion any number of units can be connected. Care must be taken that the terminating plug of the last duplicator units is in its socket. This plug contains the terminating resistor which is in the Cathode circuit of the video output tube and the operation of all units will be seriously impaired if it is not in its socket.

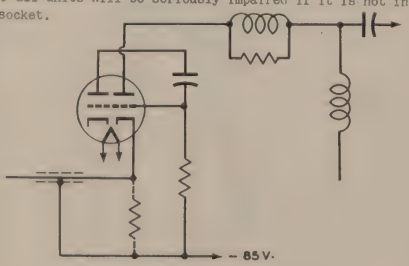


FIGURE 2

USE OF ADAPTER CABLE SA-1596

Where the use of the above adapter cables is not applicable for connection to the television receiver, it will be necessary to use adapter cable SA-1596 and connect directly to the circuits listed below.

VIDEO CONNECTIONS

The video signal to operate the duplicator is obtained from the video output tube which is the last tube in the video amplifier string. On those receivers having the cathode of the video amplifier returned directly to ground or to ground through a resistor, open the cathode lead and insert the coaxial cable as shown in Fig.1. The cathode return is completed through the resistor in the terminating plug in the duplicator unit. It is for this reason that only the SA-1596 cable(RG62V and insulated lead) be used or a mismatch will result.

For adding additional duplicator units follow same procedure as outlined above.

On some receivers the cathode of the video output tube is not returned to ground but to a negative line. In this case follow same procedure as above except the shield of the RG62V is connected to the negative line, an example of this connection is shown in Fig.2. Care must be taken that the shield does not touch the chassis at any point as the negative bias line will be shorted out.

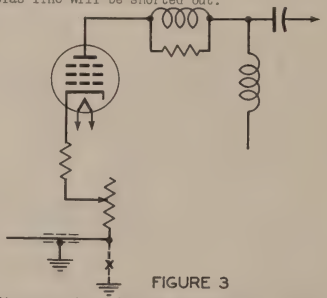


FIGURE 3

On those receivers having the contrast control in the Cathode circuit of the video output tube, open the ground terminal and connect the shielded lead to this terminal. The shield is then connected to ground as shown in Fig.3.

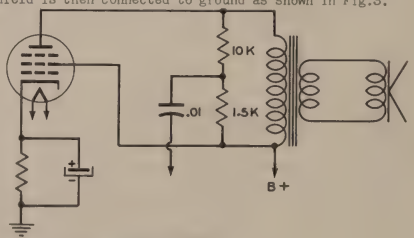


FIGURE 4

SOUND CONNECTION

A partial schematic showing the sound connections is given in figure 4. Shunt a series combination of a 10KΩ and 1500Ω resistor across the primary of the sound output transformer with the 10KΩ resistor on the plate side. From the junction of these resistors connect a coupling capacitor of not less than .01mfd/600V and connect the single insulated wire from the SA-1596 cable to this capacitor.

These connections need not be removed when the duplicator unit is turned off. If, however, the duplicator is removed the wiring in the receiver must be restored as in the original circuit.

PHOTOFACT* Folder

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PILOT
MODEL TV-37

TRADE NAME	Pilot, Model TV-37
MANUFACTURER	Pilot Radio Corp., 37-06 36th St., Long Island City, New York
TYPE SET	Television Receiver
TUBES	Twenty-one
POWER SUPPLY	105-125 Volts, 60 Cycle AC
TUNING RANGE—	Channels 2 through 13 RATING .45 Amps @ 117 Volts

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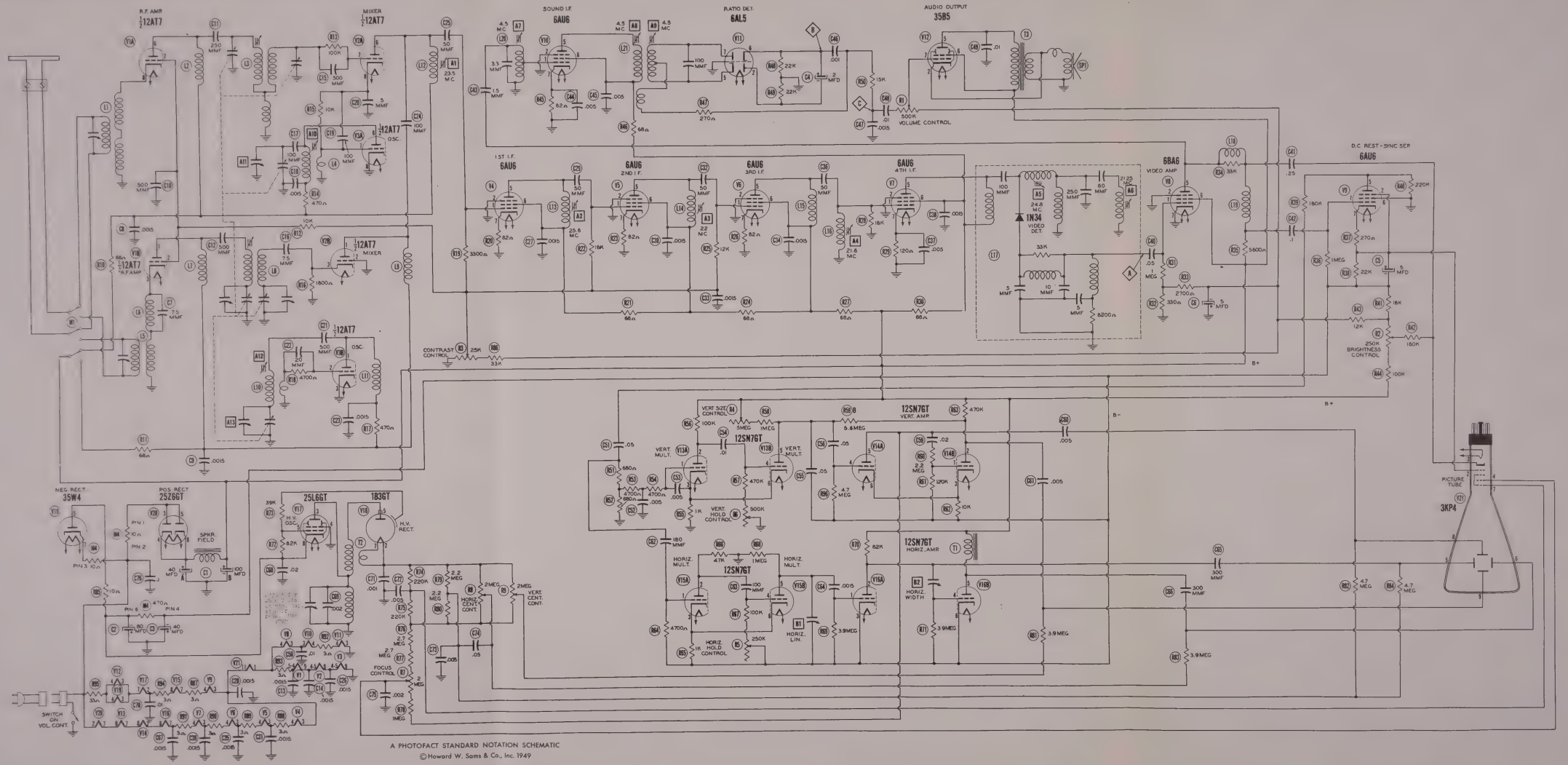
DATE 5/49 4910-16 SET #62 FOLDER 16



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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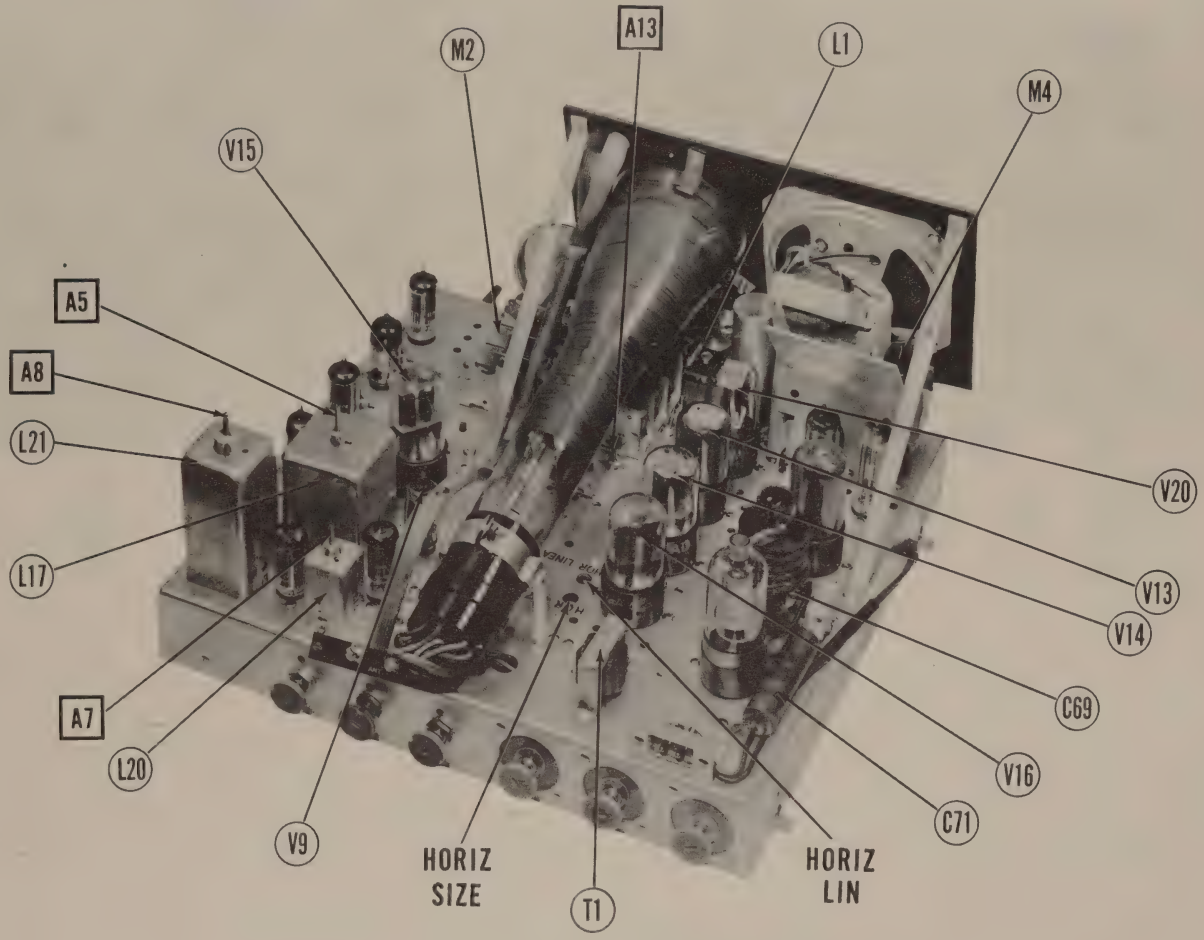
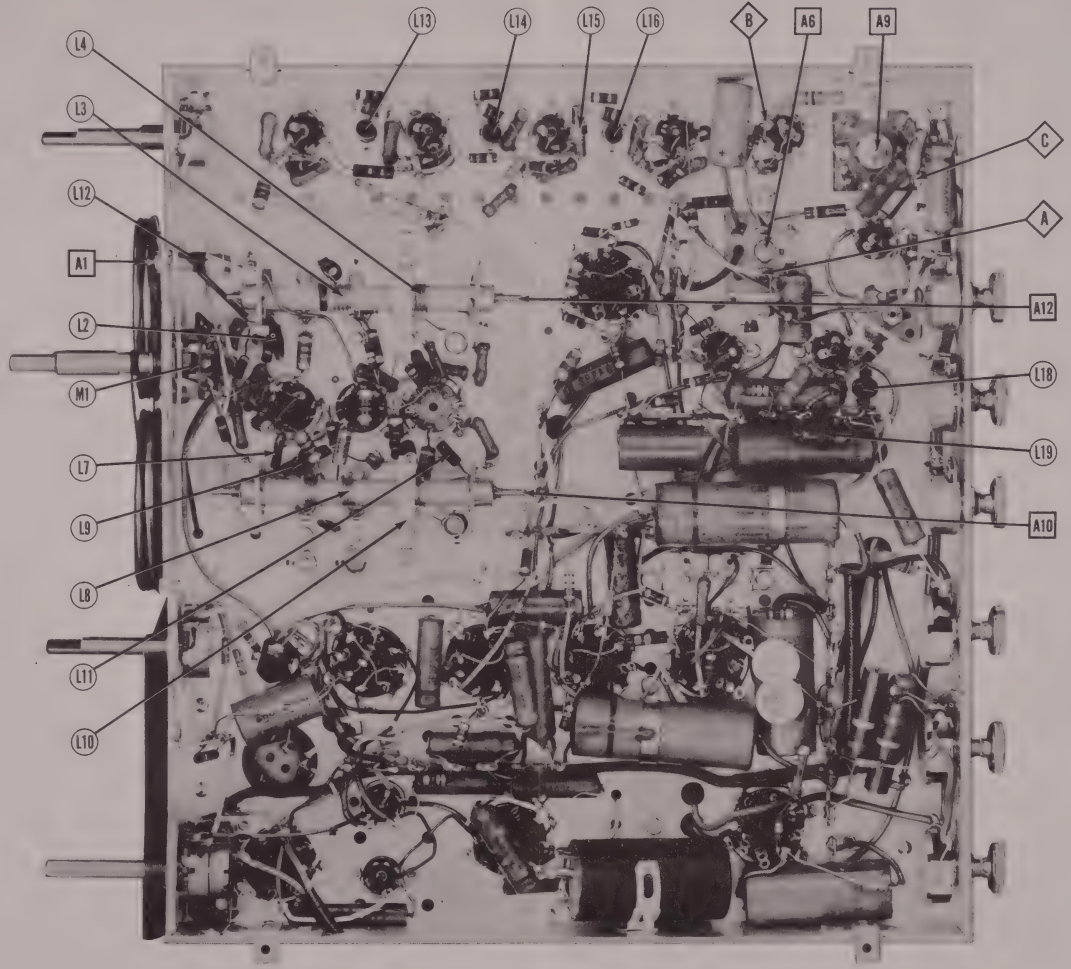
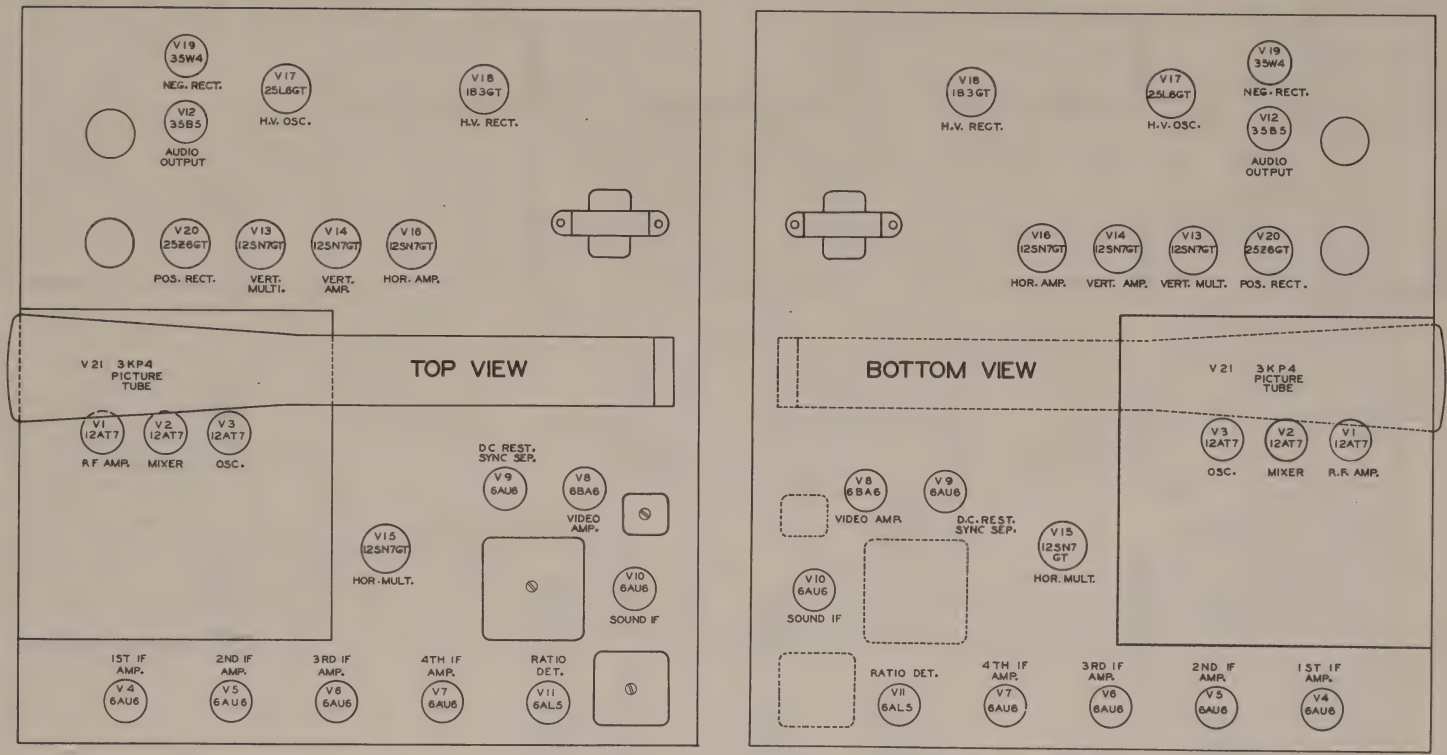


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



TUBE PLACEMENT CHART

PAGE 5

PILOT
MODEL TV-37

ALIGNMENT INSTRUCTIONS

VIDEO IF ALIGNMENT

Set contrast control to approximately 3/4 of its rotation toward maximum.

Disable the local oscillator by shorting filament pins 4, 5, and 9 of V3. (Even though this receiver incorporates a series filament string, shorting this filament will not overload the other tubes enough to damage them.)

If the video IF strip is badly misaligned or oscillating, proceed as follows. If only a retouch alignment is required, proceed as outlined in the alignment table. Connect the VTVM to point A and the signal generator to the 4th video IF amplifier grid (Pin 1 of V7). Feed in an unmodulated 21.25MC signal and adjust A6 for minimum. Tune signal generator to 24.8MC and adjust A5 for maximum. Now move the signal generator to the grid of the preceding stage and adjust A4 at 21.6MC for maximum. Continue this procedure of backing up stage by stage and as another circuit is added, align it at its proper frequency. This operation normally removes oscillations due to malalignment. It is recommended after peaking each adjustment, to reduce the signal generator output to zero. The VTVM reading should drop to zero also; if not, this will indicate the stage is oscillating. In some cases of severe oscillation it may be necessary to shunt the grid ahead of the signal generator connection with a 1000MMF capacitor.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.		Couple the signal generator high side to several turns of hook-up wire around the mixer tube. Low side of generator to chassis.	23.5MC	Any	DC Probe to Point (A) Common to chassis.	A1	Adjust for maximum deflection.
2.		"	25.6MC	"	"	A2	" " " "
3.		"	22.0MC	"	"	A3	" " " "
4.		"	21.6MC	"	"	A4	" " " "
5.		"	24.8MC	"	"	A5	" " " "
6.		"	21.25MC	"	"	A6	Adjust for minimum deflection.

OVERALL VIDIO IF RESPONSE CHECK

Connect the syncronized sweep voltage from the signal generator to the horizontal amplifier of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.		Coupled loop of wire around mixer tube.	25MC (10MC Sweep)	25.75MC 22.0MC 21.25MC	Any	Vert. Amp. to Point (A) Low side to chassis.		Check response pattern and see that markers appear as in Fig. 1. If necessary, slightly retouch A1 thru A5 to properly place markers.

SOUND IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	5000MMF	High side to Point A. Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point (B) Common to chassis.	A7, A8	Adjust for maximum deflection.
9.	5000MMF	"	"	"	DC Probe to Point (C) Common to chassis.	A9	Adjust for zero reading. A positive and negative will be obtained on either side of the correct setting.

OSCILLATOR ALIGNMENT

The RF Amp and mixer circuits are preset at the factory and are very stable and normally will not require alignment in the field.

To align the oscillator circuits connect a .01MFD capacitor from point A to the high side of the volume control. Set the contrast control at 3/4 of its full rotation.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	Direct	Across Antenna Terminals.	80MC (Unmod.)	Low band tuning cap fully closed.		A10	Adjust for zero beat in speaker.
11.	Direct	"	110MC (Unmod.)	Tuning cap fully open.		A11	Adjust for zero beat in speaker.
12.	Direct	"	200MC (Unmod)	High band tuning cap fully closed.		A12	" " " " " "
13.	Direct	"	239MC (Unmod.)	Tuning cap fully open.		A13	" " " " " "

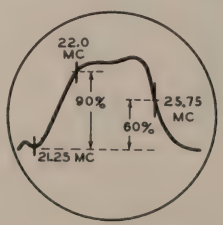
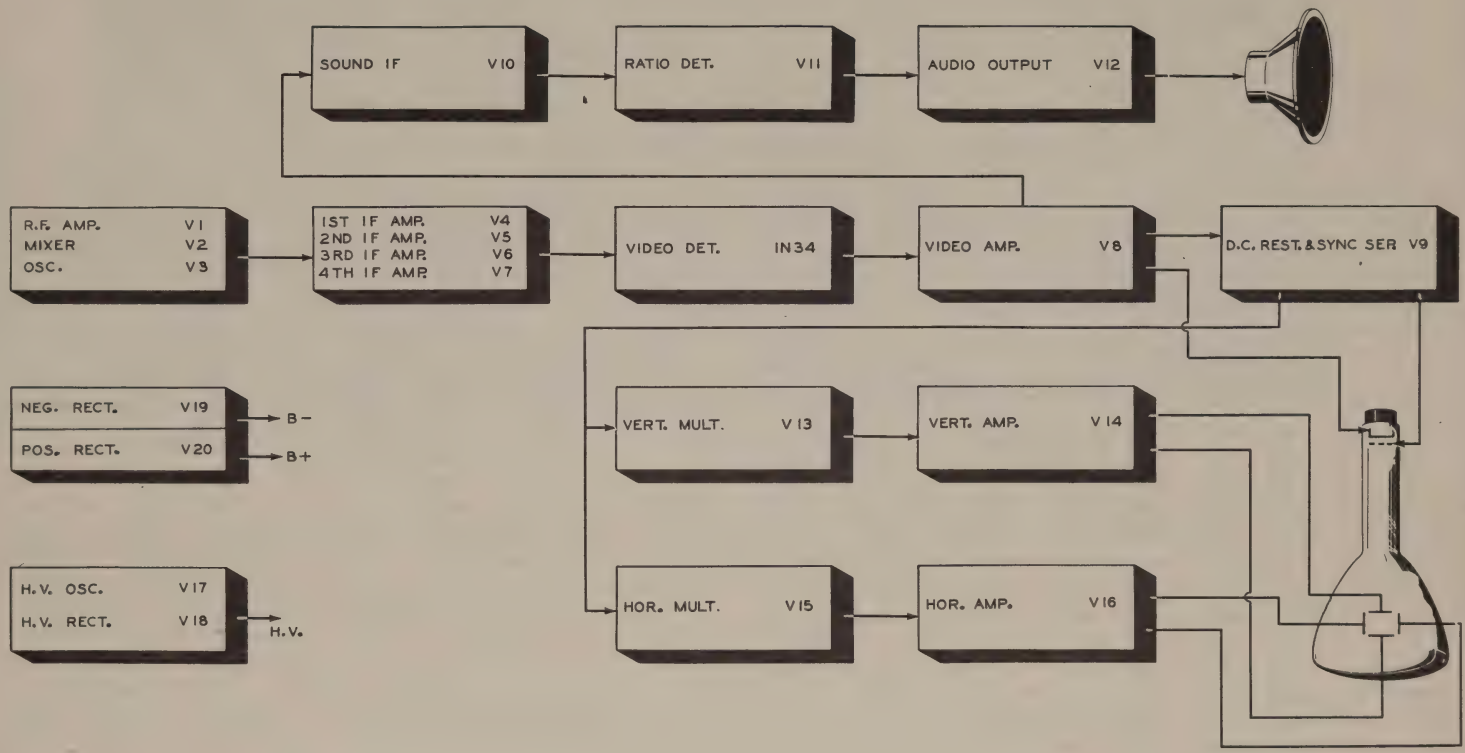


FIG. 1



BLOCK DIAGRAM

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AT7	112V.DC	-4.3V.DC	0V	20V.AC	20V.AC	112V.DC	-4.3V.DC	0V	13V.AC
V 2	12AT7	112V.DC	0V	2.6V.DC	13V.AC	13V.AC	112V.DC	-2V.DC	0V	6.5V.AC
V 3	12AT7	105V.DC	§5.8V.DC	0V	6.5V.AC	6.5V.AC	105V.DC	§-2.2V.DC	0V	0V
V 4	6AU6	-4.4V.DC	0V	28V.AC	35V.AC	112V.DC	112V.DC	0V		
V 5	6AU6	-4.1V.DC	0V	35V.AC	42V.AC	112V.DC	112V.DC	0V		
V 6	6AU6	-4.3V.DC	0V	43V.AC	50V.AC	112V.DC	112V.DC	0V		
V 7	6AU6	0V	0V	50V.AC	55V.AC	112V.DC	112V.DC	.8V.DC		
V 8	6BA6	-1V.DC	0V	14V.AC	21V.AC	42V.DC	112V.DC	0V		
V 9	6AU6	†1.8V.DC	†13V.DC	28V.AC	35V.AC	†45V.DC	†125V.DC	†13V.DC		
V 10	6AU6	0V	0V	14V.AC	8V.AC	112V.DC	112V.DC	.7V.DC		
V 11	6AL5	.3V.DC	-3V.DC	0V	7V.AC	0V	0V	0V		
V 12	35B5	-10V.DC	0V	75V.AC	108V.AC	105V.DC	113V.DC	-10V.DC		
V 13	12SN7GT	0V	27V.DC	.8V.DC	-4V.DC	2.5V.DC 20V.DC	.8V.DC	80V.AC	93V.AC	
V 14	12SN7GT	† 5.8V.DC	† 120V.DC	† 16V.DC	† .4V.DC	† 225V.DC	† 16V.DC	70V.AC	80V.AC	
V 15	12SN7GT	† 10V.DC	† 55V.DC	† 11V.DC	†4.3V.DC †8V.DC	† 32V.DC	† 11V.DC	36V.AC	50V.AC	
V 16	12SN7GT	† .5V.DC	† 95V.DC	† 9.2 V.DC	† .5V.DC	† 240V.DC	† 9.2V.DC	55V.AC	70V.AC	
V 17	25L6GT	0V	50V.AC	† 125V.DC	† 125V.DC	-5.3V.DC	0V	75V.AC	0V	
V 18	1B3GT									
V 19	35W4	0V	-.2V.DC	75V.AC	108V.AC	-125V.DC	102V.AC	116V.AC		
V 20	25Z6GT	0V	117V.AC	115V.AC	125V.DC	115V.DC	-1V.DC	80V.AC	125V.DC	

PINS		1	2	3	4	5	6	7	8	9	10	11
V21	3KP4	21VAC	†13VDC	†185VDC	*	*	*	*	*	*	0V	28VAC

† Measured from pin 5 of V19
* Do not measure. Cannot make an accurate measurement, due to high impedence of circuit.
§ Taken with vacuum tube voltmeter

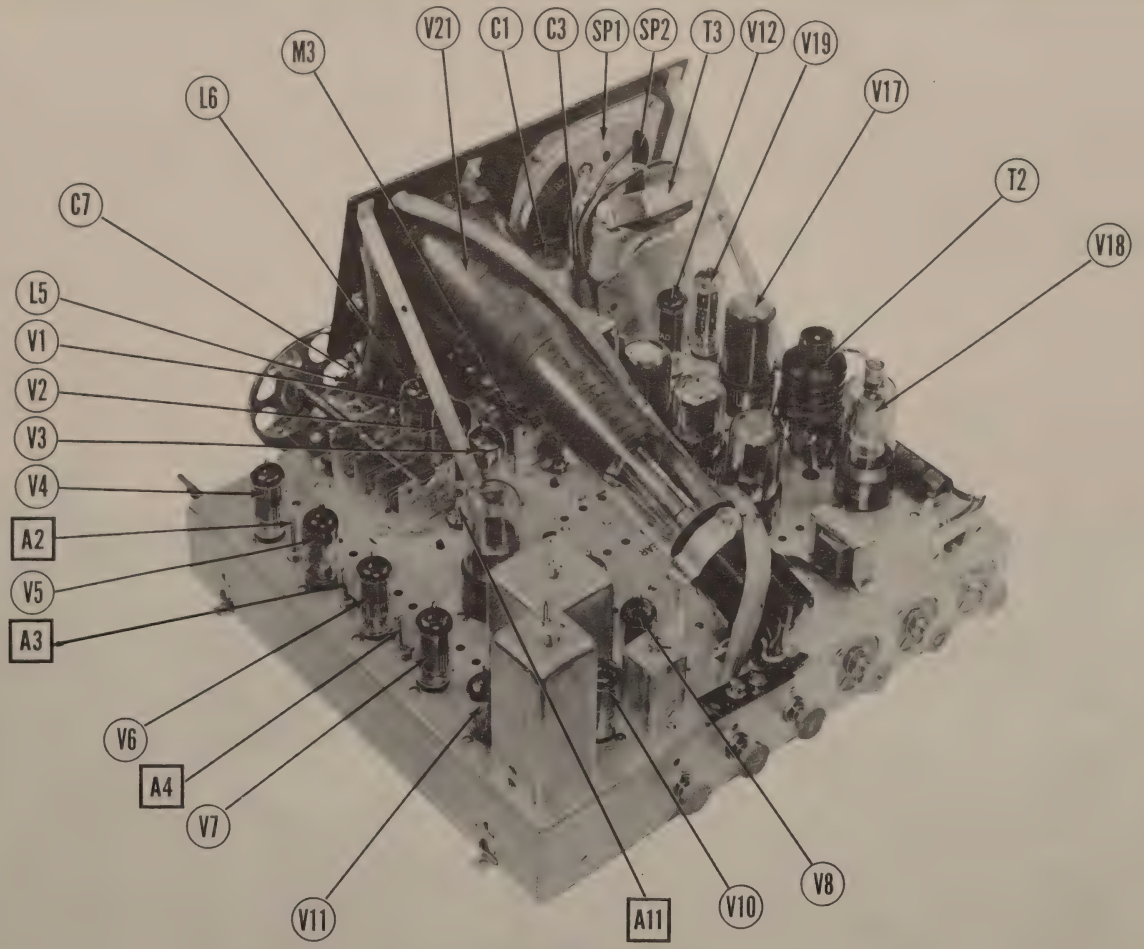
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AT7	*220Ω	26KΩ	1Ω	6Ω	6Ω	*200Ω	26KΩ	0Ω	4.5Ω
V 2	12AT7	*220Ω	0Ω	1800Ω	4.5Ω	4.5Ω	*200Ω	100KΩ	0Ω	2.5Ω
V 3	12AT7	*700Ω	4.7KΩ	0Ω	2.5Ω	2.5Ω	*700Ω	10KΩ	0Ω	0Ω
V 4	6AU6	20KΩ	0Ω	8Ω	12Ω	*360Ω	*360Ω	82Ω		
V 5	6AU6	33KΩ	0Ω	15Ω	18Ω	*280Ω	*280Ω	82Ω		
V 6	6AU6	26KΩ	0Ω	20Ω	23Ω	*220Ω	*220Ω	82Ω		
V 7	6AU6	.2Ω	0Ω	26Ω	29Ω	*220Ω	*220Ω	120Ω		
V 8	6BA6	1Meg.	0Ω	6Ω	7Ω	*5.5KΩ	*140Ω	0Ω		
V 9	6AU6	†1Meg.	†22KΩ	8Ω	12Ω	220KΩ	0Ω	†22KΩ		
V 10	6AU6	1.2Ω	0Ω	6Ω	4.8Ω	* 280Ω	* 280Ω	82Ω		
V 11	6AL5	22KΩ	22KΩ	0Ω	2.8Ω	Inf.	0Ω	Inf.		
V 12	35B5	2.9KΩ	.5Ω	33Ω	40Ω	*500Ω	*140Ω	2.8KΩ		
V 13	12SN7GT	9KΩ	*100KΩ	100Ω	820KΩ 420KΩ	*3Meg. *850KΩ	100Ω	36Ω	40Ω	
V 14	12SN7GT	†120KΩ	*470KΩ	†10KΩ	†4.7Meg.	‡8.2Meg.	†10KΩ	33Ω	36Ω	
V 15	12SN7GT	†4.7KΩ	47KΩ	†1400Ω	†350KΩ †100KΩ	1Meg.	†1400Ω	15Ω	20Ω	
V 16	12SN7GT	†3.5Meg.	*82KΩ	†470Ω	†3.5Meg.	*470Ω	†470Ω	30Ω	35Ω	
V 17	25L6GT	Inf.	22Ω	.2Ω	0Ω	†75KΩ	Inf.	32Ω	†0Ω	
V 18	1B3GT	Inf.	Inf.	Inf.	‡200KΩ	Inf.	Inf.	Inf.	Inf.	TO CAP 300Ω
V 19	35W4	Inf.	Inf.	33Ω	40Ω	33KΩ	40Ω	54Ω		
V 20	25Z6GT	0Ω	42Ω	54Ω	120KΩ	54Ω	300Ω	40Ω	120KΩ	

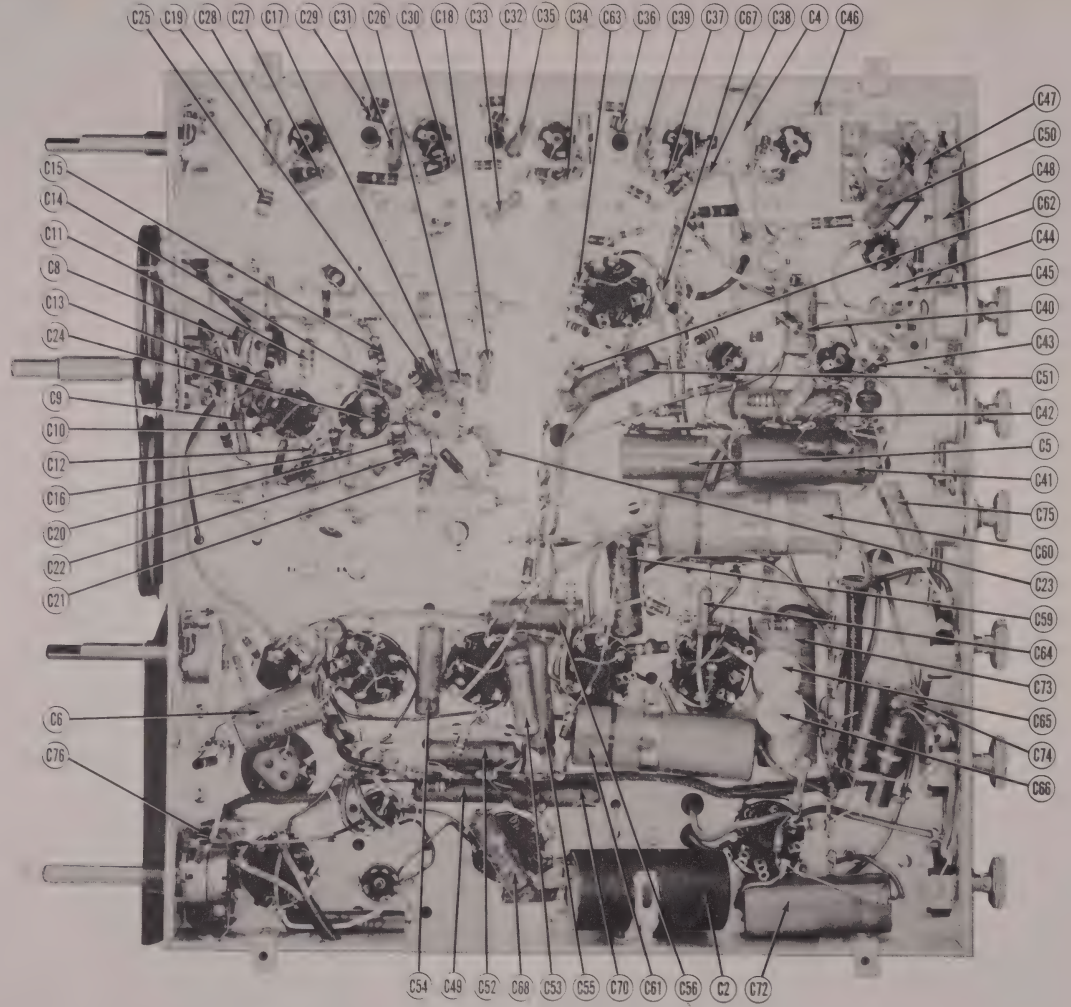
PINS		1	2	3	4	5	6	7	8	9	10	11
V21	3KP4	7Ω	†22KΩ	*250KΩ	‡4 Meg.	‡5.5 Meg.	‡4.4 Meg.	‡200KΩ	‡5.5Meg.	‡4.4 Meg.	Inf.	8Ω

* Measured from pin 8 of V20
‡ Measured from pin 2 of V18, with a VTVM
† Measured from pin 5 of V19

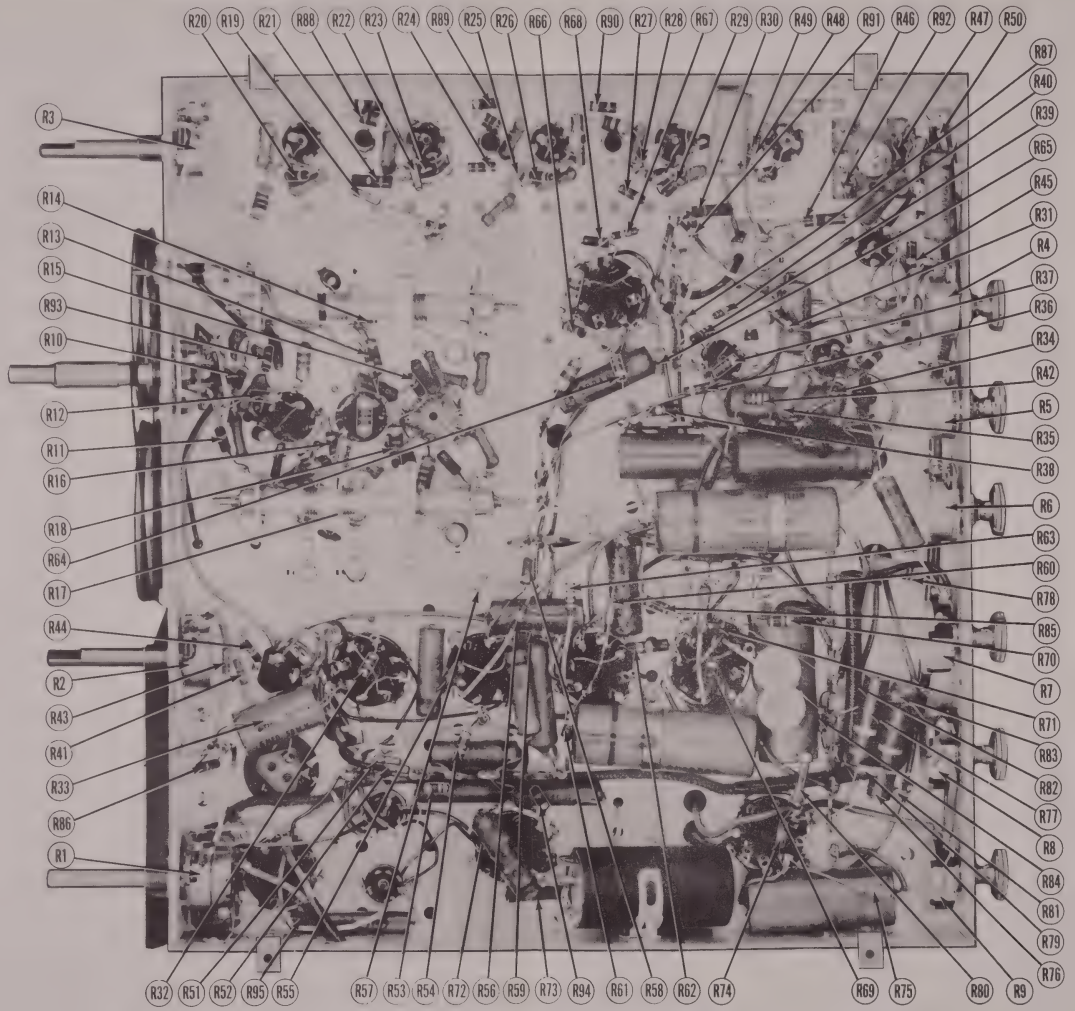
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

CABINET-REAR VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA PART No.	STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	1st Mixer	12AT7	12AT7	9A	
V2	Oscillator	12AT7	12AT7	9A	
V3	1st IF	6AU6	6AU6	7BK	
V4	2nd IF	6AU6	6AU6	7BK	
V5	3rd IF	6AU6	6AU6	7BK	
V6	4th IF	6AU6	6AU6	7BK	
V7	Video Amp.	6BA6	6BA6	7BK	
V8	DC Rest.-Sync. Sep.	6AU6	6AU6	7BK	
...	Sound IF	6AU6	6AU6	7BK	
...	Ratio Det.	6AL5	6AL5	6BT	
...	Audio Output	3S8S	3S8S	7EM	
...	Vert. Mult.	12SN7GT	12SN7GT	8SD	
...	Vert. Amp.	12SN7GT	12SN7GT	8SD	
...	Hor. Mult.	12SN7GT	12SN7GT	8SD	
...	HV Oscillator	25L6GT	25L6GT	7AC	
...	HV Rect.	1V2GT	1V2GT	3C	
...	[illegible]	[illegible]	[illegible]	5CM	
...	[illegible]	[illegible]	[illegible]	7A	
...	Picture Tube	23BP4	23BP4	11M	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	.005	6000	24-86		1441D1				▲ Filter
B	100	150							■ "
C2	80	150	24-84		UP8015			TVL-1	" "
C3	40	150	24-85	AP44F	UP4015				Stabilizing Cap.
C4	2	50	24-82	PRS150/4	RR550			TVA-12	Sync. Amp. Cath. Bypass
C5	5	50	24-97	PRS150/4	RR550			TVA-13	Sync. Amp. Cath. Bypass
C6	5	50	24-98	PRS25C-4	RR550			T A-13	Bias Filter
C7	7.5								Fixed Trimmer
C8	.001					GP2L-0015			RF Plate Decoupling
C9	.001					GP2L-0015			" "
C10				1468-0006	5W5T5	GP2K-500	M0.5-35	1FM-35	RF Grid Filter
C11	250			1468-0002	5W5T25	GP2K-250	M0.5-325	1FM-325	RF Coupling
C12	100			1468-0005	5W5T5	GP2K-500	M0.5-35	1FM-35	" "
C13	.001					GP2L-0015			RF Fil. Bypass
C14	.001					GP2L-0015			Mixer Fil. Bypass
C15	500			1468-0005	5W5T5		M0.5-35	1FM-35	RF Coupling
C16	7.5								" "
C17	100				N750L-100				Fixed Padder
C18	.001					GP2L-0015			Osc. Plate Decoupling
C19	100			1468-0001	5W5T1	GP1K-100	M0.5-31	1FM-31	Osc. Grid Cap.
C20	5				NP5K-5				Fixed Trimmer
C21	500			1468-0005	5W5T5	GP2K-500	M0.5-35	1FM-35	Osc. Feedback
C22	20				5W5Q2	NP0K-20	M0.5-42	MS-42	Osc. Grid Cap.
C23	.001					GP2L-0015			Osc. Plate Decoupling
C24				1468-0001	5W5T1	GP1K-100	M0.5-31	1FM-31	IF Coupling
C25	50			1468-0005	5W5T5	GP1K-50	M0.5-45	1FM-45	" "
C26	.001					GP2L-0015			Osc. Fil. Bypass
C27	.001			1467-0015	1W5D15	GP2L-0015	MW.5-215	1FY-215	1st IF Decoupling
C28	.001			1467-0015	1W5D15	GP2L-0015	MW.5-215	1FY-215	1st IF Fil. Bypass
C29	50			1468-0000	5W5Q5	GP1K-50	M0.5-45	1FM-45	IF Coupling
C30	.001			1467-0015	1W5D15	GP2L-0015	MW.5-215	1FY-215	2nd IF Decoupling
C31	.001			1467-0015	1W5D15	GP2L-0015	MW.5-215	1FY-215	2nd IF Fil. Bypass
C32	50			1468-0000	5W5Q5	GP1K-50	M0.5-45	1FM-45	IF Coupling
C33	.001			1467-0015	1W5D15	GP2L-0015	MW.5-215	1FY-215	Bias Filter
C34	.001			1467-0015	1W5D15	GP2L-0015	MW.5-215	1FY-215	3rd IF Decoupling
C35	.001			1467-0015	1W5D15	GP2L-0015	MW.5-215	1FY-215	3rd IF Fil. Bypass
C36	50			1468-0000	5W5Q5	GP1K-50	M0.5-45	1FM-45	IF Coupling
C37	.005			1467-0006	1W5D5	GP2M-005	MW.5-25	1FY-25	4th IF Cath. Bypass
C38	.001			1467-0015	1W5D15	GP2L-0015	MW.5-215	1FY-215	Decoupling
C39	.001			1467-0015	1W5D15	GP2L-0015	MW.5-215	1FY-215	4th IF Fil. Bypass
C40	.05	200		P285-05	GT2S5		ST-4-05	TM-15	Video Coupling
C41	.25	400		P488-25	GT4I25		ST-4-25	TC-2	" "
C42	.1	400		P488-1	GT4I1		ST-4-1	TM-1	" "
C43	1.5								S. IF Coupling
C44	.005			1467-005	1D5D5	GP2M-005	MW.5-25	1FY-25	S. IF Cath. Bypass
C45	.005			1467-005	1D5D5	GP2M-005	MW.5-25	1FY-25	S. IF Screen Bypass
C46	.001			1468-001	1W5D1	GP2L-001	MW.5-21	1FY-21	Diode Load Cap.
C47	.001			1467-0015	1W5D15	GP2L-0015	MW.5-215	1FY-215	De-emphasis
C48	.01	400		P438-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Audio Coupling
C49	.01	400		P438-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Output Plate Bypass
C50	.01	400		P438-01	GT4S1	GP2-335-01	ST-4-01	TM-11	S. IF Fil. Bypass
C51	.05	400		P488-05	GT4S5		ST-4-05	TM-15	Sync. Coupling
C52	.006	400		P688-006	GT6D6	GP2M-006	ST-4-006	TM-25	Integrator Net.
C53	.005	400		P688-005	GT6D5	GP2M-005	ST-4-005	TM-25	" "
C54	.01	400		P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Vert. Mult. Feedback
C55	.05	400		P488-05	GT4S5		ST-4-05	TM-15	Vert. Discharge
C56	.05	400		P488-05	GT4S5		ST-4-05	TM-15	Vert. Coupling
C57	.001			1467-0015	1W5D15	GP2L-0015	MW.5-215	1FY-215	Vert. Feedback *
C58	.001			1467-0015	1W5D15	GP2L-0015	MW.5-215	1FY-215	" "
C59	.1	600		P688-01	GT6I2		ST-4-02	TV-12	Vert. Coupling
C60	.005	6000		7584-005	D5TH-6005		STM-60-005	TVM-256	" "
C61	.005	6000		7584-005	D5TH-6005		STM-60-005	TVM-256	" "
C62	180								Sync. Coupling
C63	100			1468-0001	5W5T1	GP1K-100	M0.5-31	1FM-31	Hor. Mult. Feedback

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PILOT PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R10	68Ω	½			Blue-Gray-Blk. Decoupling
R11	68Ω	½			Blue-Gray-Blk. " "
R12	10KΩ	½			Br.-Blk.-Or. Bias Network
R13	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Mixer Grid
R14	270Ω	½		BTS-470	Yl.-Vi.-Br. Osc. Decoupling
R15	10KΩ	½			Br.-Blk.-Or. Osc. Grid
R16	180Ω	½		BTS-1800	Br.-Gray-Red Mixer Cathode
R17	470Ω	½		BTS-470	Yl.-Vi.-Br. Osc. Decoupling
R18	47000Ω	½			Yl.-Vi.-Red Osc. Grid
R19	33000Ω	½		BTS-3300	Gr.-Or.-Red 1st IF Grid
R20	82Ω	½			Gray-Red-Blk. 1st IF Cathode
R21	68Ω	½			Blue-Gray-Blk. 1st IF Decoupling 5%
R22	18KΩ	½		BTS-18K	Br.-Gray-Or. 2nd IF Grid
R23	82Ω	½			Gray-Red-Blk. 2nd IF Cathode
R24	68Ω	½			Blue-Gray-Blk. 2nd IF Decoupling
R25	12KΩ	½		BTS-12K	Br.-Red-Or. 3rd IF Grid
R26	82Ω	½			Gray-Red-Blk. 3rd IF Cathode
R27	68Ω	½			Blue-Gray-Blk. 3rd IF Decoupling
R28	18KΩ	½		BTS-18K	Br.-Gray-Or. 4th IF Grid
R29	120Ω	½			Br.-Red-Br. 4th IF Cathode
R30	68Ω	½			Blue-Gray-Blk. 4th IF Decoupling 5%
R31	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Video Amp. Grid
R32	330Ω	½		BTA-330	Or.-Or.-Br. Voltage Divider
R33	27000Ω	½		BTS-2700	Red-Vi.-Red " "
R34	33KΩ	½			Or.-Or.-Or. Peaking Coil Shunt
R35	56000Ω	½		BTA-5600	Grn.-Blue-Red Video Amp. Plate
R36	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Sync. Sep. Grid
R37	270Ω	½			Red-Vi.-Br. DC Restorer Cathode
R38	22KΩ	½		BTS-22K	Red-Red-Or. " "
R39	180KΩ	½		BTS-180K	Br.-Gray-Yl. Phase Correction
R40	220KΩ	½		BTS-220K	Red-Red-Yl. Sync. Sep. Plate
R41	18KΩ	½		BTS-18K	Br.-Gray-Or. Voltage Divider
R42	180KΩ	½		BTS-180K	Br.-Gray-Yl. Picture Tube Cathode
R43	12KΩ	½		BTS-12K	Br.-Red-Or. Voltage Divider
R44	100KΩ	½		BTS-100K	Br.-Blk.-Yl. " "
R45	82Ω	½			Gray-Red-Blk. Sound IF Cathode See Note 1
R46	68Ω	½			Blue-Gray-Blk. Sound IF Decoupling 5%
R47	270Ω	½			Red-Vi.-Br. Balancing
R48	22KΩ	½		BTS-22K-5%	Red-Red-Or. Ratio Det. Diode Load 5%
R49	22KΩ	½		BTS-22K-5%	Red-Red-Or. Ratio Det. Diode Load 5%
R50	15KΩ	½		BTS-15K	Br.-Grn.-Or. De-emphasis

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PILOT PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½	36-32	D11-133	M-59-S	Volume control
B	Shaft		Not Req.	A	Not Req.	Attach to R1A Per Instructions
C	Switch		Not Req.	S1	SW-A	" " " " "
R2A	250KΩ	½	36-6	D11-130	K-55-S	Brightness control
B	Shaft		Not Req.	A	Not Req.	Attach to K2A Per Instructions
R3A	2MΩ	½	39-4	D11-120	M-40-S	Contrast control
B	Shaft		Not Req.	A	Not Req.	Attach to K3A Per Instructions
R4A	10 Meg.	½	39-5	D11-141		Vert. Size control
B	Shaft		Not Req.	E ƒ		Attach to R4A Per Instructions
R5A	250KΩ	½	39-1	D11-130	AM-55-S	Horiz. Hold control
B	Shaft		Not Req.	E ƒ	KSS-5ƒ	Attach to R5A Per Instructions
R6A	500KΩ	½	39-3	D11-133	AM-58-S	Vert. Hold control
B	Shaft		Not Req.	L ƒ	KSS-3ƒ	Attach to R6A Per Instructions
R7A	2 Meg.	½	39-2		AM-55-S	Focus control
B	Shaft		Not Req.		KSS-2ƒ	Attach to R7A Per Instructions
R8A	2 Meg.	½	39-6		AM-65-S	Horiz. centering control
B	Shaft		Not Req.		KSS-2ƒ	Attach to R8A Per Instructions
R9A	2 Meg.	½	39-8		AM-63-S	Vert. centering control
B	Shaft		Not Req.		KSS-2ƒ	Attach to R9A Per Instructions

ƒ Use original insulating knob.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PILOT PART No.	IRC PART No.	IDENTIFICATION CODES
R51	680Ω	‡			BTS-680-5% Blue-Gray-Br. Voltage Divider 5%
R52	680Ω	‡			" " " " " " 5%
R53	4700Ω	‡			BTS-4700 Yl.-Vi.-Red Integrator
R54	4700Ω	‡			BTS-4700 Yl.-Vi.-Red "
R55	1000Ω	‡			BTS-1000 Br.-Blk.-Red Vert. Multi. Cathode
R56	100KΩ	‡			BTS-100K Br.-Blk.-Yl. Vert. Multi. Plate
R57	470KΩ	‡			BTS-470K Yl.-Vi.-Yl. Vert. Multi. Grid
R58	1 Meg.	‡			BTS-1 Meg. Br.-Blk.-Grn. Vert. Multi. Plate
R59A	1.2 Meg.	‡			BTS-1.2 Meg. Br.-Red-Grn. Feedback Network See Note 2
B	5.6 Meg.	‡			BTS-5.6 Meg. Grn.-Blue-Grn. " " See Note 3
R60	2.2 Meg.	‡			BTS-2.2 Meg. Red-Red-Grn. Voltage Divider
R61	120KΩ	‡			BTS-120K Br.-Red-Yl. Vert. Amp. Grid
R62	10KΩ	‡			BTS-10K Br.-Blk.-Or. Vert. Amp. Cathode
R63	470KΩ	‡			BTS-470K Yl.-Vi.-Yl. Vert. Amp. Plate
R64	4700Ω	‡			BTS-4700 Yl.-Vi.-Red Horiz. Multi. Grid
R65	1000Ω	‡			BTS-1000 Br.-Blk.-Red Horiz. Multi. Cathode
R66	47KΩ	‡			BTS-47K Yl.-Vi.-Or. Horiz. Multi. Plate
R67	100KΩ	‡			BTS-100K Br.-Blk.-Yl. Horiz. Multi. Grid
R68	1 Meg.	‡			BTS-1 Meg. Br.-Blk.-Grn. Horiz. Multi. Plate
R69	3.9 Meg.	‡			BTS-3.9 Meg. Or.-White-Grn. Horiz. Amp. Grid
R70	82KΩ	‡			BTS-82K Gray-Red-Or. Horiz. Amp. Plate
R71	3.9 Meg.	‡			BTS-3.9 Meg. Or.-White-Grn. Horiz. Amp. Grid
R72	82KΩ	‡			BTS-82K Gray-Red-Or. HV Osc. Grid
R73	39KΩ	‡			BTS-39K Or.-White-Or. HV Osc. Feedback
R74	220KΩ	‡			BTS-220K Red-Red-Yl. Voltage Divider
R75	220KΩ	‡			BTS-220K Red-Red-Yl. " "
R76	2.7 Meg.	2			Red-Vi.-Grn. " "
R77	2.7 Meg.	2			Red-Vi.-Grn. " "
R78	1 Meg.	1			BTA-1 Meg. Br.-Blk.-Grn. " "
R79	2.2 Meg.	‡			BTS-2.2 Meg. Red-Red-Grn. " "
R80	2.2 Meg.	‡			BTS-2.2 Meg. Red-Red-Grn. " "
R81	3.9 Meg.	‡			BTS-3.9 Meg. Or.-White-Grn. Vert. Deflection Load
R82	4.7 Meg.	‡			BTS-4.7 Meg. Yl.-Vi.-Grn. " " "
R83	3.9 Meg.	‡			BTS-3.9 Meg. Or.-White-Grn. Horiz. Deflection Load
R84	4.7 Meg.	‡			BTS-4.7 Meg. Yl.-Vi.-Grn. " " "
R85	10Ω	‡			Br.-Blk.-Blk. Surge Limiter See Note 4
R86	33KΩ	‡			BTS-33K Or.-Or.-Or. Voltage Divider
R87	22	‡			blk.-Or.-Blk. Filament Dropping
R88	32	‡			Blk.-Or.-Blk. " "
R89	32	‡			Blk.-Or.-Blk. Filament Dropping
R90	32	‡			Blk.-Or.-Blk. " "
R91	32	‡			Blk.-Or.-Blk. " "
R92	32	‡			Blk.-Or.-Blk. " "
R93	32	‡			Blk.-Or.-Blk. " "
R94	32	‡			Blk.-Or.-Blk. " "
R95	332	4			A5-35 " "
R96	4.7 Meg.	‡			BTS-4.7 Meg. Yl.-Vi.-Grn. Vert. Output Grid

Note 1. Some models use 1200Ω resistor in this application.
Note 2. Used in early production.
Note 3. Used in later production.
Note 4. Not used in all models.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA PILOT PART No.	MEISSNER PART No.	NOTES
L1	Ant. Coil Low Band	02	02			
L2	RF Choke	12		75-33		
L3	RF Plate Coil Low Band	02	02			
L4	Osc. Coil Low Band	02	02			
L5	Ant. Coil High Band	02	02			
L6	RF Choke	12		75-33		
L7	RF Choke	12		75-33		
L8	RF Plate Coil High Band	02	02			
L9	RF Choke	1.52		75-22		
L10	Osc. Coil High Band	02	02			
L11	RF Choke	22		75-28		
L12	1st Video IF	.22		273-127		
L13	2nd Video IF	.22		273-127		
L14	3rd Video IF	.22		273-126		
L15	RF Choke	1.52		75-22		
L16	4th Video IF	.22		273-126		
L17	Video Det. Coil Assy.			279-37		
L18	Peaking	62		75-24		Inductance-240 Microhenries
L19	Peaking	52		75-23		Inductance-390 Microhenries
L20	Sound IF	52		279-40		
L21	Ratio Det.	92	12	279-39		

PILOT MODEL TV-37

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATING		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	PILOT PART No.	JENSEN PART No.	QUAM PART No.	
SP1	150Ω	3.1Ω			*	* Supplied on request. Give field resistance and direct current.
	CONE DIA.	V. C. DIA.				
SP2	3 7/8"	9/16"				

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	DC RESISTANCE		PILOT PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.					
T1	330Ω						Hor. Amp. Plate Choke

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	PILOT PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
T2	.22Ω	280Ω	0Ω					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PILOT PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T3	4600Ω	3.1Ω	360Ω	.5Ω		A-3877	RO-8	A-2930	

MISCELLANEOUS

ITEM No.	PART NAME	PILOT PART No.	NOTES
M1	Band Switch	100-66	
M2	Tuning Gang		
M3	Tuning Gang		
M4	Ballast Tube		

WIDTH AND HORIZONTAL LINEARITY ADJUSTMENTS

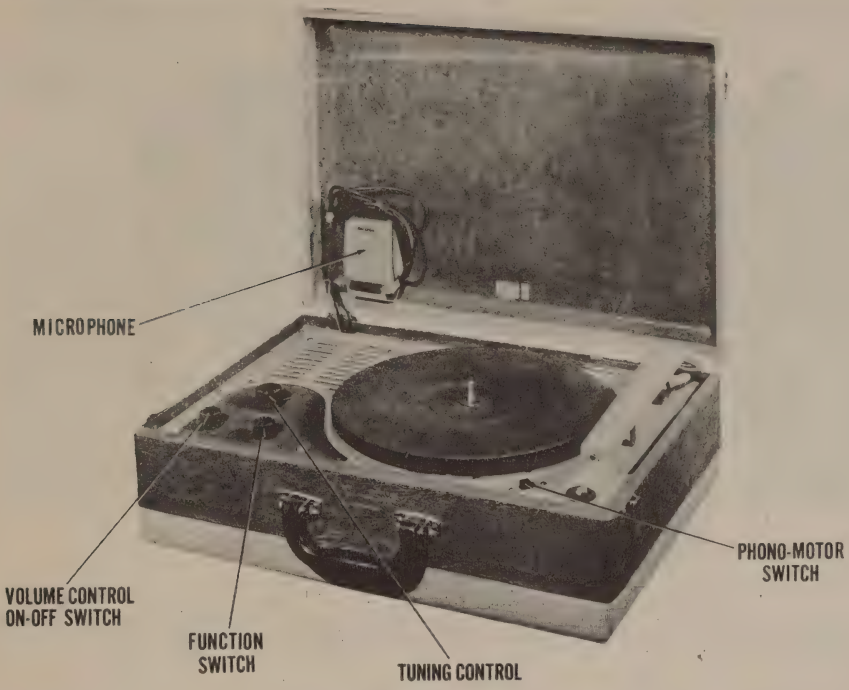
Turn horizontal linearity trimmer B1 counter-clockwise as far as possible without crowding left side of the picture. Then adjust B2 (width control) until picture just fills the mask horizontally.

HEIGHT AND VERTICAL LINEARITY ADJUSTMENTS

Adjust the height control until the picture fills the mask vertically. If the vertical linearity is not satisfactory exchange the 1.2 megohm resistor (R59A) connected between the plate circuit of the first vertical amplifier and the "negative going" supply for a larger or smaller valued resistor, until the linearity is improved. This is done on early production models. Later production models employ a different methode of feedback to improve vertical linearity.

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type and one set screw type control knobs.
2. Remove four wood screws holding bottom chassis plate to cabinet.
3. Pull power cord interlock back to disengage it.
4. Lift cabinet up off chassis.
5. Remove four wood screws holding chassis to bottom plate.
6. Remove two wood screws holding antenna strip. Remove chassis.



RECORDIO MODELS
8J10, 8J50

RECORDIO MODELS
8J10, 8J50

RECORDIO MODEL 8J10

TRADE NAME Recordio, Models 8J10, 8J50
MANUFACTURER Wilcox-Gay Corp., 604 Seminary St., Charlotte, Michigan
TYPE SET AC Operated Combination Phono-Recorder-Superheterodyne Receiver With Loop Antenna
TUBES (FIVE) Types 6BE6 Converter, 6BA6 IF Amp.-Mic. Preamp., 6AT6 DET-AVC.-AF, 6AQ5 Power Output, 6X4 Rectifier

POWER SUPPLY 110-120 Volts AC RATING .34 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST 530-1700KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	250MMF	High side pin 7 (Grid) 6BE6 (V1) Low side to chassis.	456KC	Tuning cap. Fully Open	Across voice coil	A1, A2 A3, A4	Adjust for Maximum output.
2	250MMF	High Side to Ext. Ant. terminal. Low side to chassis.	1400KC	1400KC	"	A5, A6	" " " "
3	250MMF	"	600KC	600KC	"	A7	Rock tuning gang and adjust for maximum Output.

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PARTS LIST AND DESCRIPTIONS

RECORDIO MODEL 8J10

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RECORDIO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	6BE6	6BE6	7CH	
V2	IF Amp.-Mic. Pre Amp	6BA6	6BA6	7BK	
V3	DET-AVC-AF	6AT6	6AT6	7BT	
V4	Power output	6AQ5	6AQ5	7BZ	
V5	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RECORDIO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	10	450		AF444J4A	UP111		DY-402	EL-431	▲ Filter
C1B	12	450			45C				■ Filter
C1C	12	450							● Filter
C1D	30	25							Output Cath. Bypass.
C2	100			1468-0001	5W5T1	GPIK-100	MO.5-31	1FM-31	Osc. Grid Cap. Note
C3	.01	400		P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Osc. Anode Bypass
C4	.05	400		P488-05	GT4S5		ST-4-05	TM-15	Ant. Isolation
C5	.05	400		P488-05	GT4S5		ST-4-05	TM-15	AVC. Filter
C6	.01	400		P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	IF Decoupling
C7A	100			1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Diode Filter Note 1
C7B	50			1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	Diode Filter Note 1
C8	10000			P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Audio Coupling Note 2
C9	5000			P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Audio Coupling Note 3
C10	100			1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	AF. Plate By Pass Note 4
C11	.01	400		P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Output Plate Bypass
C12	.01	400		P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	RF Bypass
C13	1000			1468-001	1W5D1	GP2L-001	MW.5-21	1FM-21	Tone Comp.
C14	.01	600		P688-01	GT6S1	GP2-335-01	ST-6-01	TM-11	Line Filter

Note Item C2 and R2 are combined into one unit.
Note 1. Item C7A, C7B and R8 are combined into one unit.
Note 2. Item C8 and R9 are combined into one unit.
Note 3. Item C9 and R11 are combined into one unit.
Note 4. Item C10 and R10 are combined into one unit.

CONTROLS

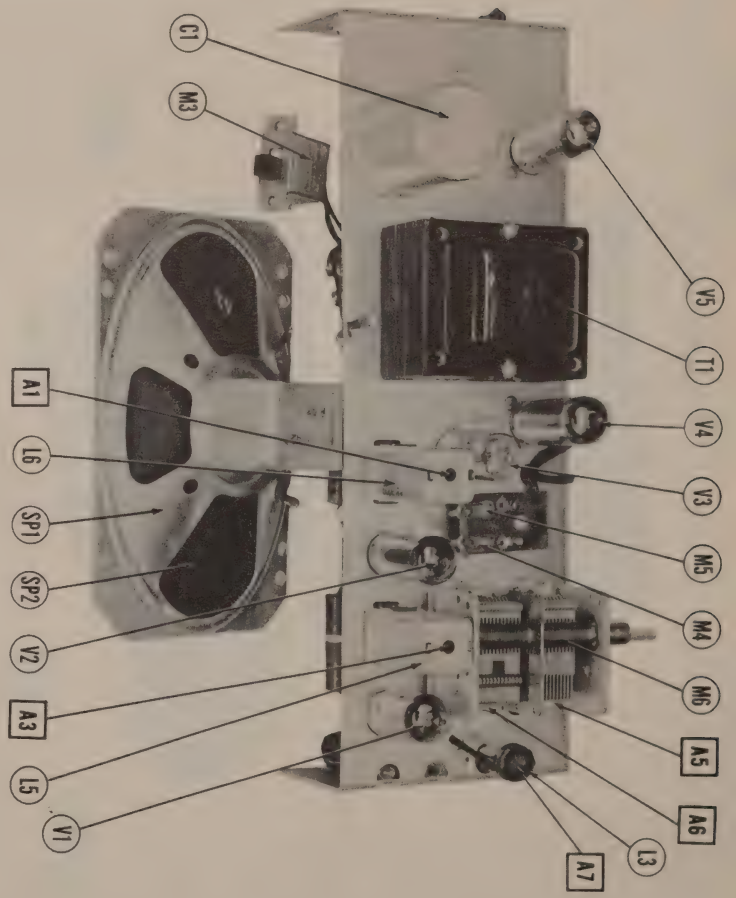
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RECORDIO PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½	19-2194-1	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to R1A per Instructions.
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RECORDIO PART No.	IRC PART No.	IDENTIFICATION CODES	
R2	22KΩ	½		BTS-22K		Osc. Grid See Note
R3	22KΩ	2		BT-2-22K	Red-Red-Or.	Osc. Anode
R4	68Ω	½		BW-½-68	Blue-Gray-Blk.	IF Cathode
R5	10KΩ	½		BT-2-10K	Br.-Blk.-Or.	IF Decoupling
R6	2.2 Meg.	½		BTS-2.2Meg.	Red-Red-Grn.	AVC. Network
R7	2.2 Meg.	½		BTS-2.2Meg.	Red-Red-Grn.	" "
R8	47KΩ	½		BTS-47K		Diode Filter See Note 1
R9	10Meg.	½		BTS-10Meg		AF Grid See Note 2
R10	220KΩ	½		BTS-220K		AF Plate See Note 4
R11	470KΩ	½		BTS-470K		Output Grid See Note 3
R12	470Ω	2		BW-2-470	Yl.-Vl.-Br.	Output Cathode
R13	1Meg.	½		BTS-1Meg.	Br.-Blk.-Grn.	Feedback
R14	2.2Meg.	½		BTS-2.2Meg.	Red-Red-Grn.	Record Load Resistor
R15	6800Ω	1		BTA-6800	Blue-Gray-Red.	Filter
R16	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	Phono Shunt
R17	2.2Meg.	½		BTS-2.2Meg.	Red-Red-Grn.	Series Phono
R18	1.8Ω	½		BW-½-1.8	Br.-Gray-Gold.	Output Trans. Shunt. See Note 5
R19	1.5Ω	½		BW-½-1.5	Br.-Grn.-Gold	" " " " " "

Note Item C2 & R2 are combined into one unit. Note 3 Item C9 & R11 are combined into one unit.
Note 1 Item C7A,B & R8 are combined into one unit. Note 4 Item C10 & R10 are combined into one
Note 2 Item C8 & R9 are combined into one unit. Note 5 Not used in all models. unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	RECORDIO PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
T1	117V.AC 0.34A	810V.AC CT @ 250ADC	6.1V.AC @ 2A			P-6119	PV-50 * #	P-3048*

* Enlarge cut out.
\# Add series resistor to reduce plate voltage.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE PRI.	IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	RECORDIO PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
T2	2.4K Ω	2.4Ω	325Ω	.8Ω		A-3877	RO-302	A-2930	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	V.C. IMP.	RECORDIO PART No.	JENSEN PART No.	QUAM PART No.	
SP1	DW	3.5Ω			46A1	
SP2	CONE DIA. 4"x6"	V.C. IMP. 9/16"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	RECORDIO PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
L1	.082A	500Ω	5H		C-1707	R-1240†	C-2976	† Drill new mounting hole.

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA RECORDIO PART No.	REPLACEMENT DATA MEISSNER PART No.
L2	Loop Ant.	0Ω			
L3	Loop Reading	2Ω			
L4	OSC Coil	.3Ω	3.5Ω		14-1060
L5	Input IF	1Ω	1Ω		16-6678
L6	Output IF	1Ω	1Ω		16-6675

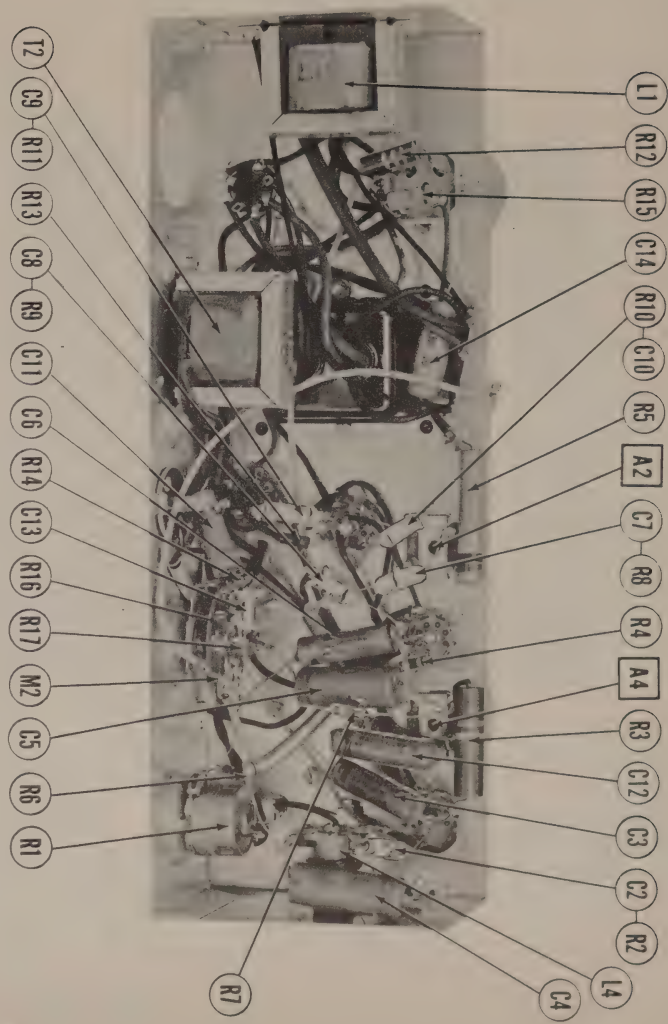
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA RECORDIO PART No.	REPLACEMENT DATA ASTATIC PART No.	REMARKS
M1		P-3R	

MISCELLANEOUS

ITEM No.	PART NAME	RECORDIO PART No.	NOTES
M2	Switch		Function
M3	Switch		Phono Motor
M4	Lamp		Neon
M5	Lamp		Neon
M6	2 Gang Var. Cap.		(27-467MMF, 32-210MMF)

CHASSIS—BOTTOM VIEW



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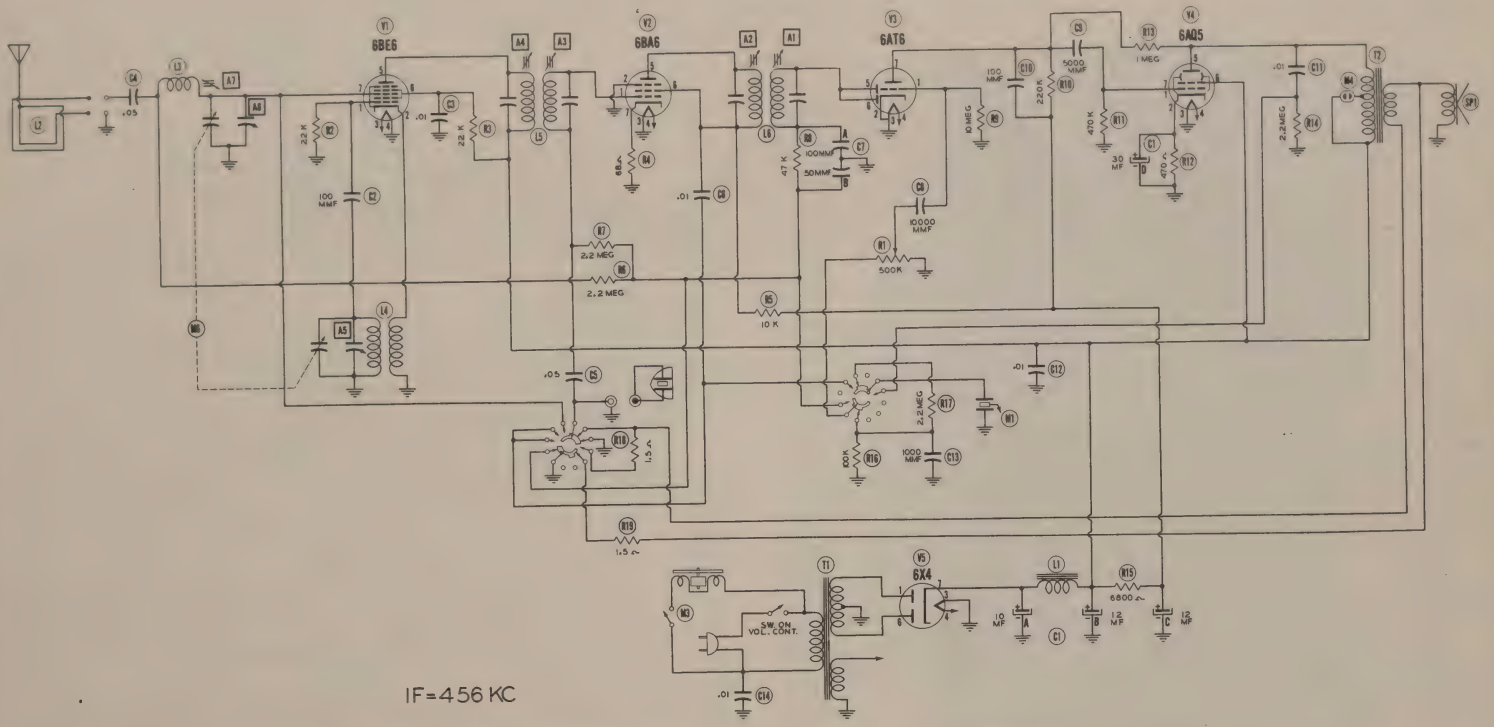
RECORDIO MODEL 810

RECORDIO MODEL 810



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BE6	§-8.6VDC	0V	0V	6.5VAC	250VDC	90VDC	-.1VDC
V 2	6BA6	-.1VDC	0V	0V	6.5VAC	95VDC	90VDC	.6VDC
V 3	6AT6	-.4VDC	0V	0V	6.5VAC	-.5VDC	-.5VDC	.75VDC
V 4	6AQ5	0V	15VDC	0V	6.5VAC	240VDC	250VDC	0V
V 5	6X4	250VAC	0V	0V	6.5VAC	0V	250VAC	270VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BE6	2.8KΩ	.32	0Ω	.2Ω	500Ω	22.5KΩ	3 Meg.
V 2	6BA6	2.5Meg.	0Ω	0Ω	.2Ω	16KΩ	16KΩ	70Ω
V 3	6AT6	10Meg.	0Ω	0Ω	.2Ω	550KΩ	550KΩ	220KΩ
V 4	6AQ5	470KΩ	470Ω	0Ω	.2Ω	860Ω	500Ω	470KΩ
V 5	6X4	28Ω	INF.	0Ω	.2Ω	INF.	270Ω	130KΩ

* Measured from pin 7 of V5

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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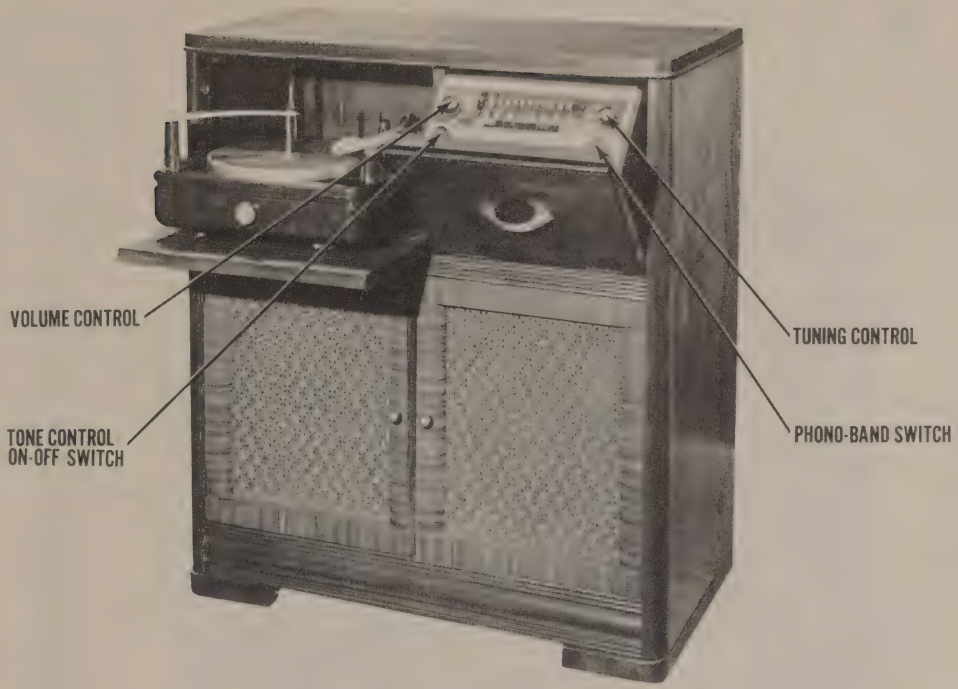
4910-17

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

SILVERTONE MODELS 7119, 8097A,
8115, A, B, C, 8117, 8118, A, B, C



SILVERTONE MODELS 7119, 8097A,
8115, A, B, C, 8117, 8118, A, B, C

SILVERTONE MODEL 8115B

TRADE NAME	Silvertone, Models 7119 (Ch. 101.825-26), 8097A (Ch. 121.825-4), 8115 (Ch.101.825-3D), 8115A, B, C, (Ch. 101.825-4), 8117 (Ch.101.825-3E), 8118 (Ch. 101.825-3F), 8118 A,B,C, (Ch. 101.825-4).
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan St., Chicago, Illinois
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Ant.
TUBES(NINE)	Types 7F8 Oscillator, 7H7 Mixer, 7W7 1st IF Amp., 7W7 FM 2nd IF Amp.-AM DET.-AVC, 7C7 FM 3rd IF, 7A6 FM Discriminator, 7C6 AF Amp., 7C5 Power Output, 7Z4 Rectifier
POWER SUPPLY	110-120 Volts AC — RATING .56 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	530-1650KC — FREQ. MOD. 88-108MC

PUSHBUTTON ADJUSTMENTS

Each pushbutton should be set up to receive a desired station in the following manner:

1. Pull pushbutton off its lever.
2. Loosen in a counter-clockwise direction the adjusting screw in the pushbutton lever about one and a half turns. With a small screwdriver in the screw head slot, push the lever down and hold it there.
3. Manually tune in a desired station.
4. Tighten the adjusting screw.
5. Replace pushbutton, being sure the slot in the pushbutton and the lever tab are in line.
6. Follow the same procedure for the remaining buttons.
7. Check the accuracy of the pushbutton settings, by detuning the receiver manually and then repushing button. If station selected can be tuned in clearer manually the pushbutton should be reset.

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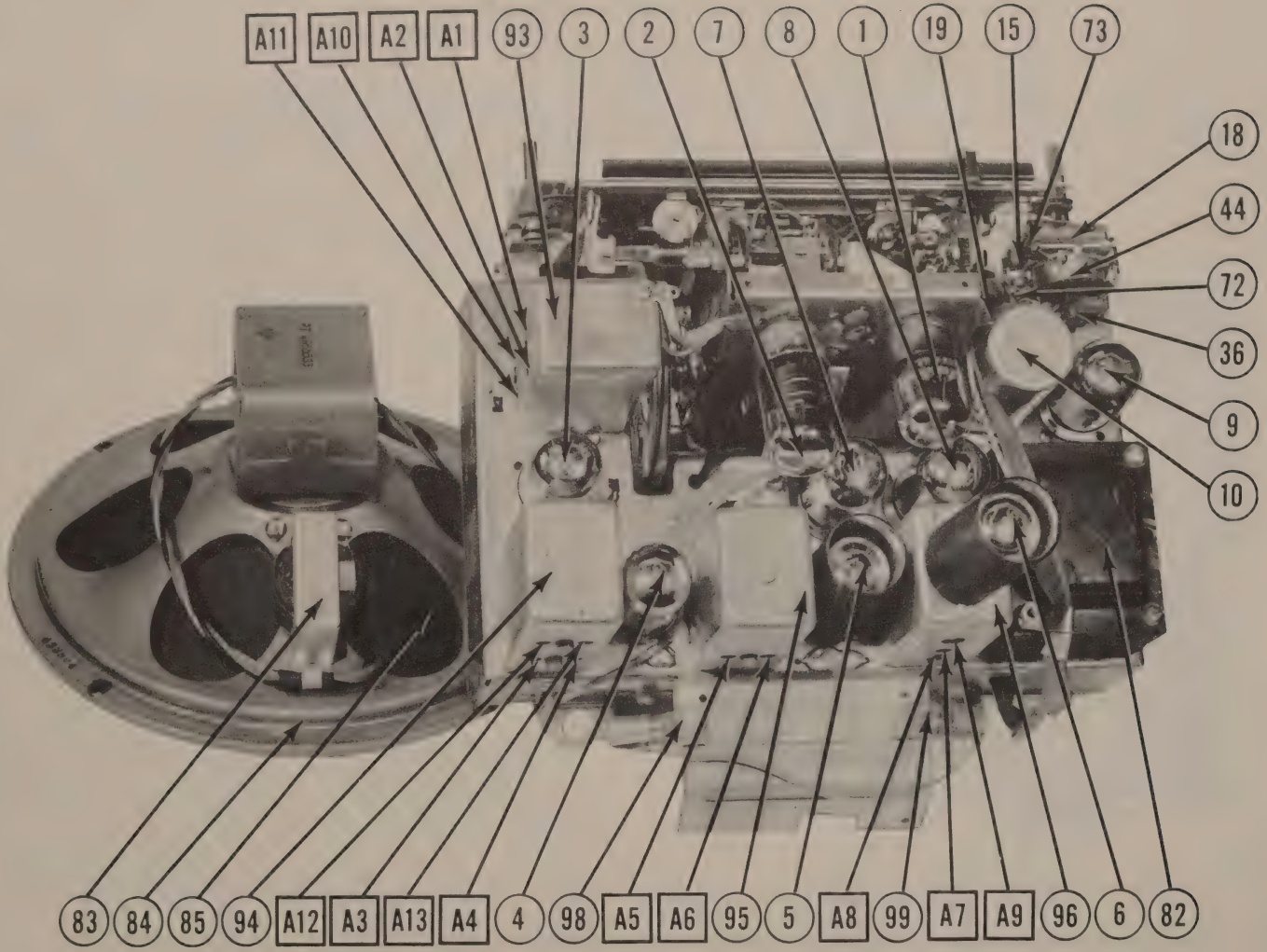
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Osc.-Mixer	7F8	7F8	8BW	
2	Mixer	7W7	7W7	8V	
3	1st IF Amp.	7W7	7W7	8BJ	
4	FM 2nd IF Amp.-AM DET.-AVC	7W7	7W7	8BJ	
5	FM 3rd IF	7C7	7C7	8V	
6	FM Discriminator	7A6	7A6	7AJ	
7	AF Amp.	7C6	7C6	9W	
8	Power Output	7C5	7C5	6AA	
9	Rectifier	7Z4	7Z4	5AB	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
10A	30	400	R62750		UP4445C			EL-330	◓ Filter
B	30	400							■ "
C	25	25							▲ Cathode Bypass
11	2	50	R64915	FR5150/4	BR245			D7994	Stabilizing Cap.
12	.005	600		504-005	GT5D5	GP2M-005	ST-6-005	TM-25	Output Plate Bypass
13	.01	400		484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Audio Coupling
14	.005	400		484-005	GT6D5	GP2M-005	ST-6-005	TM-25	" "
15	.01	400		484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	" "
16	.1	200		484-1	GT2F1		ST-2-1	TM-1	AF Plate Decoup.
17	.005	400		484-005	GT6D5	GP2M-005	ST-6-005	TM-25	Tone Comp.
18	.01	400		484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	" "
19	.008	400		484-0075	GT6D6	GP2-335-0075	ST-6-006	TM-26	" "
20	.1	400		484-1	GT4F1		ST-4-1	TM-1	Decoupling
21	.02	200		484-02	GT2S2		ST-4-02	TM-12	3rd IF Screen Bypass
22	.1	200		484-1	GT2F1		ST-2-1	TM-1	3rd IF Grid Filter
23	.02	200		484-02	GT2S2		ST-4-02	TM-12	2nd IF Plate Decoup.
24	.02	200		484-02	GT2S2		ST-4-02	TM-12	2nd IF Screen Bypass
25	.02	200		484-02	GT2S2		ST-4-02	TM-12	2nd IF Cathode Bypass
26	.02	200		484-02	GT2S2		ST-4-02	TM-12	1st IF Plate Decoup.
27	.02	400		484-02	GT4S2		ST-4-02	TM-12	1st IF Screen Bypass
28	.02	200		484-02	GT2S2		ST-4-02	TM-12	1st IF Cathode Bypass
29	.02	200		484-02	GT2S2		ST-4-02	TM-12	AVC Filter
30	.02	200		484-02	GT2S2		ST-4-02	TM-12	Fil. Bypass
31	.05	200		484-05	GT2S5		ST-4-05	TM-15	Mixer Screen Bypass
32	.05	100		484-05	GT2S5		ST-4-05	TM-15	Mixer Cathode Bypass
33	.005	400		484-005	GT6D5	GP2M-005	ST-6-005	TM-25	Osc. Plate Bypass
34	.05	200		484-05	GT2S5		ST-4-05	TM-15	Loop Ant. Coupling
35	100	500		1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	AF Plate Bypass
36	150	500		1468-00015	5W5T15	GP2K-200	MO.5-315	1FM-315	Tone Comp.
37	750	500		1468-00075	5W5T7	GP2K-750	MO.5-37	1FM-37	De-emphasis
38	100	500		1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	AM Osc. Grid Cap.
39	100	500		1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	FM Osc. Feedback
40	15	300	R63586			GP1K15			Fixed Padder
41	50	500		1468-00005	5W5Q5	GP1K-500	MO.5-45	1FM-45	FM Ant. Coupling
42	50	500		1468-00005	5W5Q5	GP1K-500	MO.5-45	1FM-45	FM Ant. Isolation
43	200	500		1468-0002	5W5T2	GP2K-200	MO.5-32	1FM-32	RF Bypass

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
44A	2 Meg.	½	R62771	D13-137XX		Volume control tapped @ 500K and 1 Meg.
B	Shaft		Not Req.	A		Attach to 44A Per Instructions
45A	1 Meg.	½	R62768	D13-137	M-63-Z	Tone Control
B	Shaft		Not Req.	A	Not Req.	Attach to 45A Per Instructions
C	Switch		Not Req.	41	SW-A	" " " " "

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: MEISSNER PART No.	
86	AM Loop Ant.		0Ω	R57037		
87	FM Dipole Ant.		0Ω			
88	BC Loop					
	Loading	0Ω	2.3Ω	R60726		
89	FM Ant.		0Ω	R60727		
90	FM Mixer		0Ω	R60728		
91	AM Osc.		2.5Ω	R60746		
92	FM Osc.		0Ω	R60751		
93A	AM 1st IF	7Ω	7Ω	R60734		
B	FM 1st IF		.1Ω			
94A	AM 2nd IF	‡12Ω		R60735		‡ Includes FM Primary
B	FM 2nd IF					
95	FM 3rd IF	1.5Ω	1.5Ω	R61442		
96	Ratio Det.	1.5Ω	.6Ω	R60736		
97	Ant. Choke		0Ω	R61628		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: SILVERTONE PART No.		NOTES
98	Bayonet	6-8V	0.15A	Brown			Type #47
99	Bayonet	6-8V	0.15A	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
100	Switch	R62767	Band-Phono
101	Switch	R60963	Ant. Selector
102	Switch		Hi Boost
103	Switch		Low Boost
104			
	Tuning Gang	R60725	
	Dial Pointer	R62786	
	Dial	R63014	

DISASSEMBLY INSTRUCTIONS

1. Remove phono motor plug and phono pickup plug from rear of chassis.
2. Remove screw holding speaker plug. Remove speaker plug.
3. Remove four 3/8" hex nuts holding speaker. Remove speaker.
4. Remove four push-on type control knobs and seven push button caps.
5. Remove loop and FM antenna.
6. Remove two screws holding antenna mounting strip.
7. Remove two metal screws from rear chassis mount.
8. Remove two 1/4" metal screws from top of chassis. Remove chassis.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.		
46	470Ω	½		BTS-470	Y1.-V1.-Br.	Mixer Cathode
47	100KΩ	½		BTS-100K	Br.-Blk.-Y1.	Mixer Screen
48	10KΩ	½		BTS-10K	Br.-Blk.-Or.	Mixer Plate Decoup.
49	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn.	AVC Net.
50	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn.	" "
51	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn.	" "
52	22KΩ	½		BTS-22K	Red-Red-Or.	FM Osc. Grid
53	22KΩ	½		BTS-22K	Red-Red-Or.	FM Osc. Plate
54	10KΩ	½		BTS-10K	Br.-Blk.-Or.	AM Osc. Plate
55	47KΩ	½		BTS-47K	Y1.-V1.-Or.	AM Osc. Grid
56	56Ω	½			Grn.-Blue-Blk.	AM Osc. Cathode
57	1.5 Meg.	½		BTS-1.5 Meg.	Br.-Grn.-Grn.	AVC Net.
58	150Ω	½			Br.-Grn.-Br.	1st IF Cathode
59	22KΩ	½		BTS-22K	Red-Red-Or.	1st IF Screen
60	1000Ω	½		BTS-1000	Br.-Blk.-Red	1st IF Plate Decoup.
61	330KΩ	½		BTS-330K	Or.-Or.-Y1.	Diode Load
62	150Ω	½			Br.-Grn.-Br.	2nd IF Cathode
63	10KΩ	½		BTS-10K	Br.-Blk.-Or.	2nd IF Screen Dropping
64	100KΩ	½		BTS-100K	Br.-Blk.-Y1.	2nd IF Screen Bleeder
65	1000Ω	½		BTS-1000	Br.-Blk.-Red	2nd IF Plate Decoup.
66	1000Ω	½		BTS-1000	Br.-Blk.-Red	Decoup.
67	15Ω	½			Br.-Grn.-Br.	AVC Shunt
68	22KΩ	½		BTS-22K	Red-Red-Or.	3rd IF Grid
69	18KΩ	1		BTA-18K	Br.-Gray-Or.	3rd IF Decoup.
70	100KΩ	½		BTS-100K	Br.-Blk.-Y1.	Recorder Socket Shunt
71	4.7 Meg.	½		BTS-4.7 Meg.	Y1.-V1.-Grn.	Series Recorder Socket
72	68KΩ	½		BTS-68K	Blue-Gray-Or.	Tone Comp.
73	68KΩ	½		BTS-68K	Blue-Gray-Or.	" "
74	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-Grn.	AF Grid
75	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Y1.	AF Plate Load
76	220KΩ	½		BTS-220K	Red-Red-Y1.	AF Plate Decoup.
77	2000Ω	5		AB-2000		Voltage Dropping
78	470KΩ	½		BTS-470K	Y1.-V1.-Y1.	Output Grid
79	330Ω	1		BW-1-330	Or.-Or.-Br.	Output Cathode
80	47Ω	½		BW-½-47	Y1.-V1.-Blk.	Parasitic Supp.
81	2000Ω	5		AB-2000		Filter

TRANSFORMER (POWER)

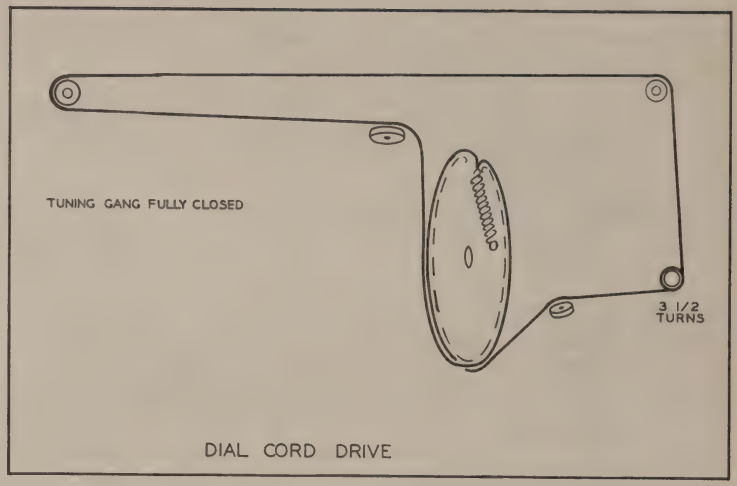
ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	SILVERTONE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
82	117VAC @ .56A	580VCT @ .073 ADC	6.6VAC @ 3.5A		R62777			P-3048

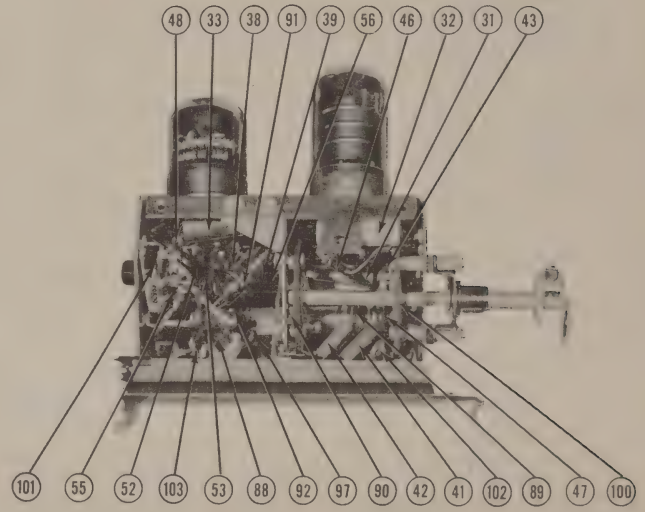
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SILVERTONE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
83	5400Ω	3.7Ω	285Ω Tap @ 7Ω	.9Ω	R60785			A-3032#	# Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	V. C. IMP.	SILVERTONE PART No.	JENSEN PART No.	QUAM PART No.	
84A B C	PM	3.7Ω	R65533 R62752 R62677	ST-120† MOD.P10-S	10A31	† Replace output XFMR to match 6-8Ω voice coil.
	CONE DIA.	V. C. DIA.				
85A B C	8 3/4"	1"	R65595 R63047 R65279			





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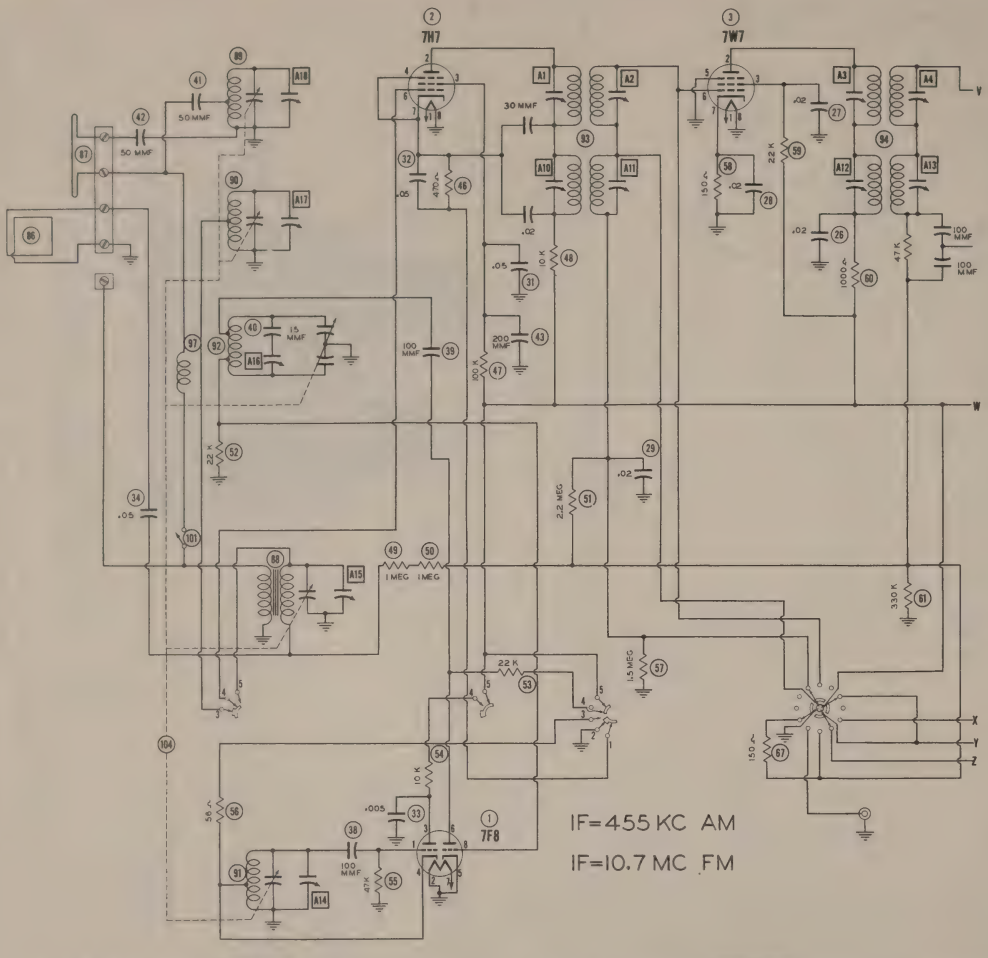

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1A	7F8	4.6Vac	0	110Vac	0	95	Inf.	95	4.6Vac
#1	7W7	47MΩ	12	Inf.	02	95	1MΩ	95	4.6Vac
2	7H7	95	110KΩ	5.6MΩ	470Ω	02	0.10Vac	470Ω	12
3	7W7	95	54MΩ	1MΩ	150Ω	95	9MΩ	150Ω	12
4	7H7	12	1MΩ	110KΩ	150Ω	02	47MΩ	150Ω	04
#5	7C7	02	150KΩ	10MΩ	95	95	1MΩ	95	12
#6	7A6	02	1MΩ	Inf.	200KΩ	02	.5Ω	Inf.	02
7	7F8	6.2	2.65Vac	15Vac	02	02	95	95	12
8	7C7	02	1.1MΩ	1.1MΩ	100KΩ	20KΩ	47MΩ	6.4Ω	12
9	7A6	12	Inf.	1MΩ	Inf.	Inf.	1MΩ	1MΩ	95

TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1A	7F8	4.6Ω	12	110Ω	0Ω	95	Inf.	95	4.6Ω
#1	7W7	47MΩ	12	Inf.	02	95	1MΩ	95	4.6Ω
2	7H7	95	110KΩ	5.6MΩ	470Ω	02	0.10Ω	470Ω	12
3	7W7	95	54MΩ	1MΩ	150Ω	95	9MΩ	150Ω	12
4	7H7	12	1MΩ	110KΩ	150Ω	02	47MΩ	150Ω	04
#5	7C7	02	150KΩ	10MΩ	95	95	1MΩ	95	12
#6	7A6	02	1MΩ	Inf.	200KΩ	02	.5Ω	Inf.	02
7	7F8	6.2	2.65Ω	15Ω	02	02	95	95	12
8	7C7	02	1.1MΩ	1.1MΩ	100KΩ	20KΩ	47MΩ	6.4Ω	12
9	7A6	12	Inf.	1MΩ	Inf.	Inf.	1MΩ	1MΩ	95

VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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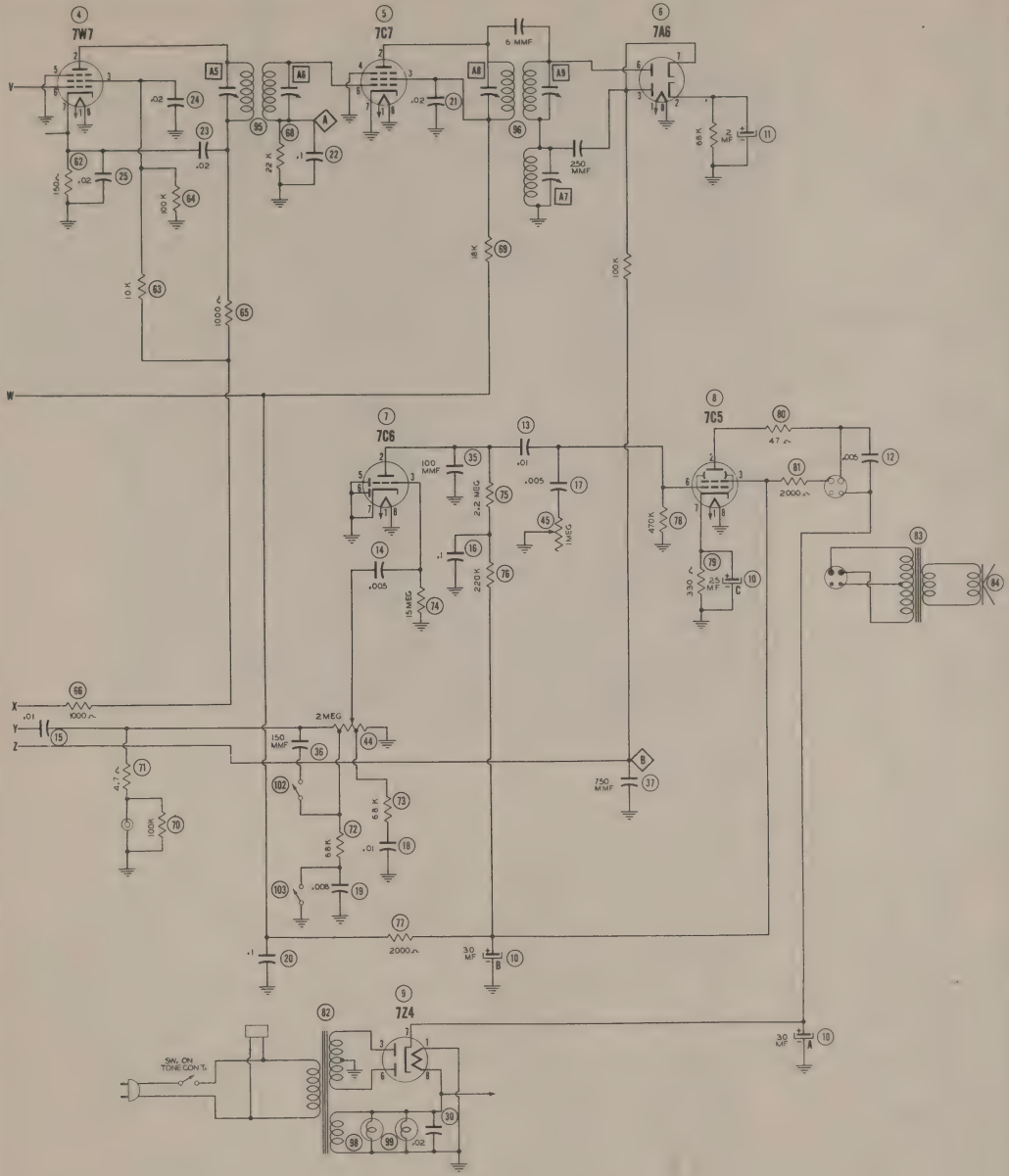

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer, turn tuning cap fully closed and set pointer 3/4" from left edge of dial backplate. This is the calibration mark referred to in steps below.

Use insulated alignment screwdriver for adjusting.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Attenuate output of signal generator to maintain VTVM reading of approximately 2.5 Volts.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.1MFD	High side to pin 1 (Grid) of 7F8. Low side to chassis.	10.7MC (Unmod.)	FM (counter clock-wise)	Tuning cap fully closed	DC Probe to point (A) Common to chassis.	A1, A2 A3, A4 A5, A6 A7	Adjust for maximum deflection.
2.	.1MFD	"	"	"	"	DC Probe to point (B) Common to chassis.	A8, A9	Connect output meter across voice coil. Adjust A8 for zero deflection VTVM. Adjust A9 for minimum audio output. Continue with AM Alignment in step 3.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 600KC sweep.

Connect the synchronized sweep voltage from the signal generator to horizontal input of scope. If signal generator does not have this provision, the sync. voltage may be taken from the power line. If a double trace pattern is obtained, rotate phase control to obtain a single pattern. If scope does not have phase control, or sync. voltage is taken from power line, the same thing may be accomplished by inserting a cap. of suitable value (.01 to .1MFD) between voltage source and scope horizontal input.

In step 1 connect a 5000Ω resistor from point A to chassis. Insert 50KΩ resistor in series with vertical input of scope at point A.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
1.	300Ω carbon res.	High side to pin 1 (Grid) of 7F8. Low side to chassis.	10.7MC (Freq.Mod)	FM	Tuning cap fully closed	Vertical input to point (A) Ground to chassis. (See Pre-alignment notes)	A1, A2 A3, A4 A5, A6	Adjust for maximum symmetry and coincidence of pattern per Fig 1. Remove 5KΩ and 50KΩ resistors.
2.	300 carbon res.	"	"	"	"	Vertical input in series with 50KΩ resistor to point (B) Ground to chassis.	A7, A8 A9	Adjust A7 for maximum amplitude of pattern and A8 and A9 for maximum straightness of diagonal line with center of diagonal line in center of scope horizontal sweep line per Fig.2. Continue with AM Alignment in step 3.

FIG. 1

FIG. 2

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
3.	.1MFD	High side to pin 1 (Grid) of 7F8. Low side to chassis.	455KC	AM (center position)	Tuning cap fully closed	Across voice coil.	A10, A11, A12, A13	Adjust for maximum output.
4.	200MMFD	High side to ext. AM. Ant. terminal. Low side to chassis.	1500KC	"	4 27/32" from calibration mark	"	A14	" " " "
5.	200MMFD	"	"	"	Tune for maximum output.	"	A15	Adjust for maximum output.

FM RF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 600KC sweep.

Connect the synchronized sweep voltage from the signal generator to horizontal input of scope. If signal generator does not have this provision, the sync. voltage may be taken from the power line. If a double trace pattern is obtained, rotate phase control to obtain a single pattern. If scope does not have phase control, or sync. voltage is taken from power line, the same thing may be accomplished by inserting a cap. of suitable value (.01 to .1MFD) between voltage source and scope horizontal input.

Connect a 5000Ω resistor from point A to chassis. Insert a 50KΩ reistor in series with vertical input of scope at point A.

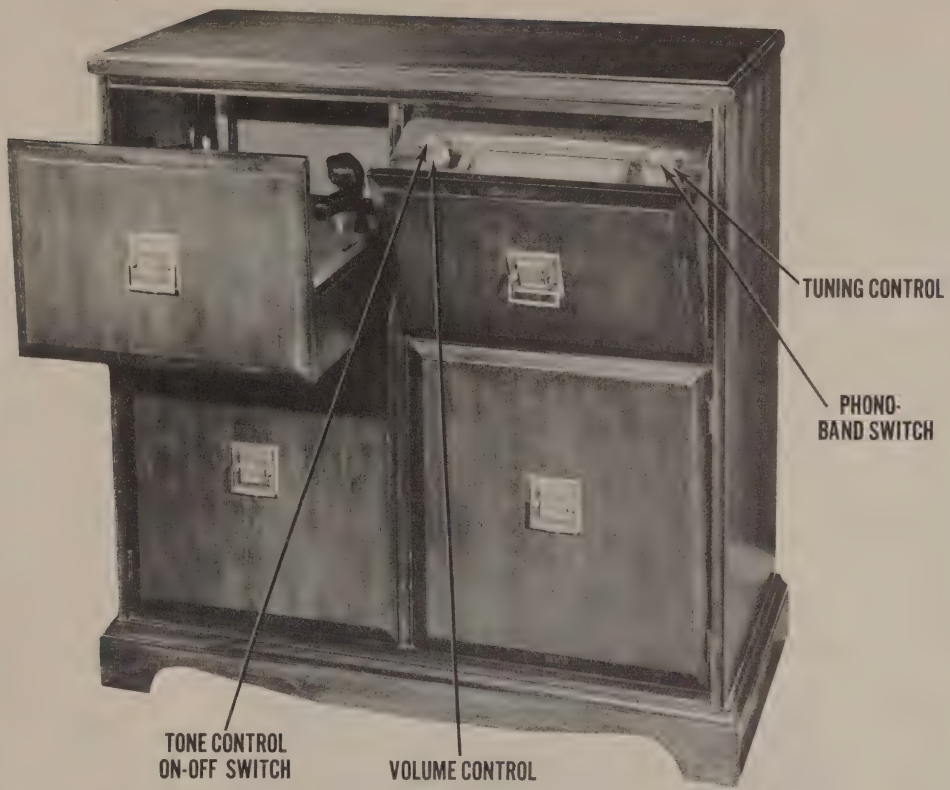
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
6.	2-120Ω carbon res.	Each side in series with 120Ω to FM Antenna terminals.	108MC (Freq.Mod)	FM	4 27/32" from calibration mark	Vertical input to point (A) Ground to chassis. (See Pre-alignment Notes)	A16	Adjust for centering of Fig 1. on scope sweep line. If pattern can be obtained at two points on A16, adjust for lowest capacity of A16.
7.	2-120Ω carbon res.	"	106MC (Freq.Mod)	"	Tune for pattern per Fig 1.	"	A17, A18	Rock tuning cap and adjust for maximum amplitude of pattern per Fig 1. Remove 5KΩ and 50KΩ resistors.

FM RF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Attenuate output of signal generator to maintain VTVM reading of approximately 2.5 Volts.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	2-120Ω carbon res.	Each side in series with 120Ω to FM Antenna terminals.	108MC (Unmod.)	FM	4 27/32" from calibration mark.	DC Probe to point (A) Common to chassis.	A16	Adjust for maximum deflection.
7.	2-120Ω carbon res.	"	106MC (Unmod.)	"	Tune for maximum deflection	"	A17, A18	Rock tuning cap and adjust for maximum deflection.

SPARTON MODELS 1035, A, 1036, A, 1037, A, 1039, 1040, 1041 (Ch. 9L8)



SPARTON MODELS 1035, A, 1036, A, 1037, A, 1039, 1040, 1041 (Ch. 9L8)

SPARTON MODEL 1040

TRADE NAME	Sparton, Models 1035, 1035A, 1036, 1036A, 1037, 1037A, 1039, 1040, 1041 (Ch.9L8)
MANUFACTURER	Sparks-Withington Co., Jackson, Michigan
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Ant.
TUBES(NINE)	Types 6BA6 RF Amp., 6BE6 Converter, 7A7 1st IF Amp., 7AG7 FM 2nd IF Amp., 7AG7 FM 3rd IF Amp., 6AL5 FM DET., 7B6 AM DET-AVC-AF, 7B5 Power Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC RATING .55 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	535-1610KC FREQ. MOD. 88-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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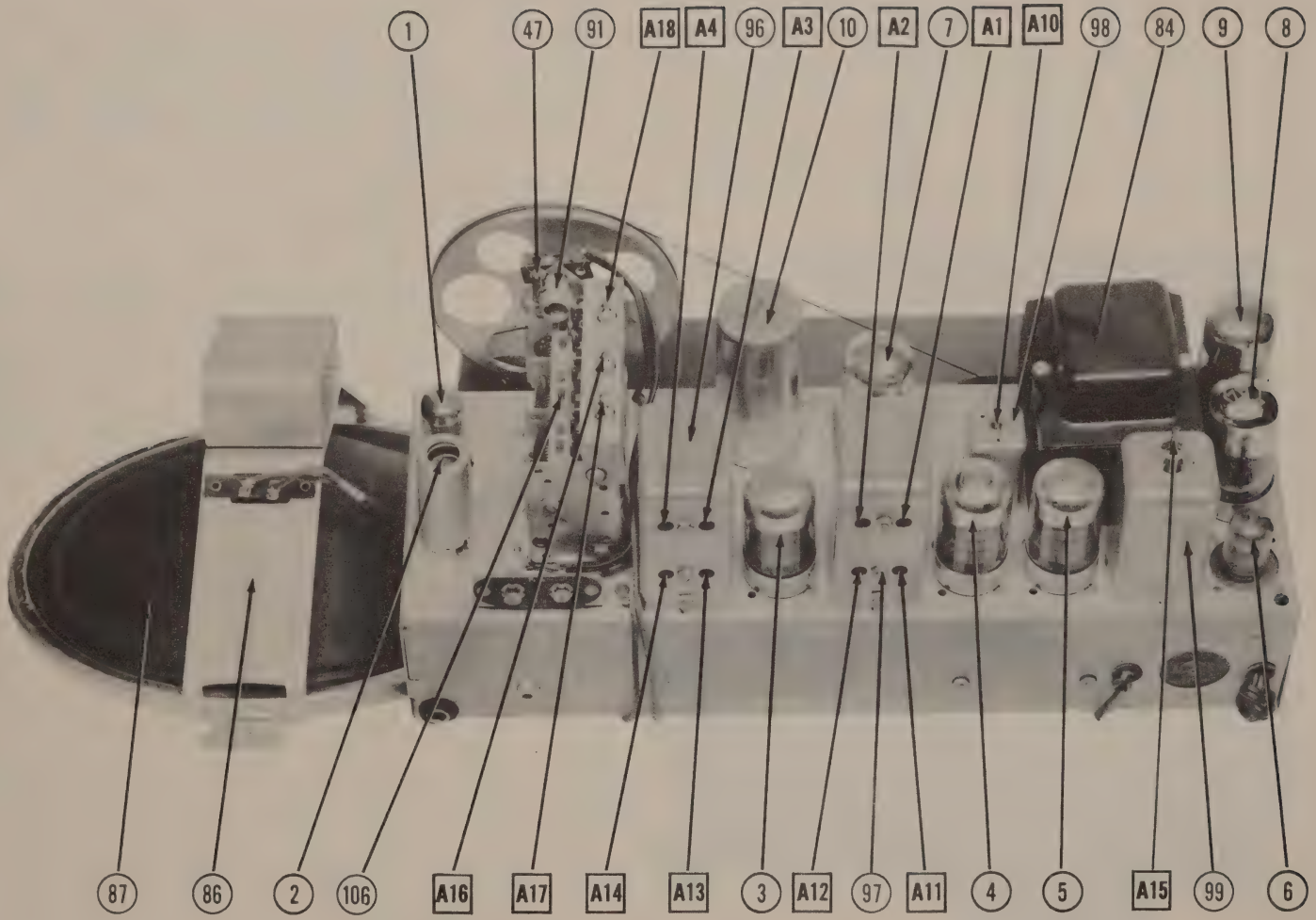
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SPART A PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6BA6	6BA6	7AK	
2	Converter	6BE6	6BE6	7CH	
3	1st IF Amp.	7A7	7A7	8V	
4	FM 2nd IF Amp.	7AG7	7AG7		
5	FM 3rd IF amp.	7AG7	7AG7		
6	FM Det.	6AL5	6AL5	6BT	
7	AM DET.-AVC-AF	7B6	7B6	8W	
8	Power Output	7B5	7B5	6AE	
9	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SPARTON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
10A	40	400	PA4307-3	AF88J4A	UP4445C		DY-314	EL-4241†	◓ Filter
B	40	400							■ "
C	20	25							▲ Cathode Bypass
11	3	50	PA4308-1	PRS150/4	BR-415		M-4-450	TA-55	Stabilizing Cap.
12	.006	1000	PC40GN-602	1084-006	GT16D6		STM-16-006	TR-26	Output Plate Bypass
13	.02	400	PC40GL-203	484-02	GT4S2		ST-4-02	TM-12	Audio Coupling
14	.01	200	PC40GK-103	484-01	GT2S1	GP2-335-01	ST-4-01	TM-11	Tone Comp.
15	.05	400	PC40GL-503	484-05	GT4S5		ST-4-05	TM-15	Decoupling
16	.01	400	PC40GK-103	484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	RF Bypass
17	.01	400	PC40GK-103	484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	AVC Filter
18	.05	200	PC40GK-503	484-05	GT4S5		ST-4-05	TM-15	RF Coil Isolation
19	150	500	MC60P-151	1468-00015	5W5T15	GP2K-150	MO.5-315	1FM-315	AF Plate Bypass
20	20000	300	HK35G-203	484-02	GT4S2		ST-4-02	TM-12	Decoupling
21	20000	300	HK35G-203	484-02	GT4S2		ST-4-02	TM-12	Audio Coupling
22	2000	300	HK35G-202	484-002	GT6D2	GP2M-002	ST-6-002	TM-22	Phono Tone Comp.
23	330	300	HK35P-331	1468-00035	5W5T3	GP2K-300	MO.5-33	1FM-335	Diode Load Cap.
24	2000	300	Note 1	484-002	GT6D2	GP2M-002	ST-6-002	TM-22	De-emphasis
25	20000	300	HK35G-203	484-02	GT4S2		ST-4-02	TM-12	AVC Filter
26	20000	300	HK35G-203	484-02	GT4S2		ST-4-02	TM-12	3rd IF Plate Decoup.
27	20000	300	Note 2	484-02	GT4S2		ST-4-02	TM-12	3rd IF Cath. Bypass
28	100	500	MC60G-101	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	3rd IF Coupling
29	20000	300	Note 8	484-02	GT4S2		ST-4-02	TM-12	2nd IF Cath. Bypass
30	1000	300	Note 3	1468-001	1W5D1	GP2L-001	MO.5-21	1FM-21	2nd IF Grid Filter
31A	100	300	Note 4	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Diode Filter
B	100	300	Note 4	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	" "
32	20000	300	HK35G-203	484-02	GT4S2		ST-4-02	TM-12	1st IF Plate Decoup.
33	20000	300	Note 5	484-02	GT4S2		ST-4-02	TM-12	1st IF Screen Bypass
34	20000	300	Note 6	484-02	GT4S2		ST-4-02	TM-12	1st IF Cath. Bypass
35	20000	300	Note 7	484-02	GT4S2		ST-4-02	TM-12	1st IF Grid Filter
36	20000	300	HK35G-203	484-02	GT4S2		ST-4-02	TM-12	Conv. Plate Decoup.
37	1000	500	PA4328-2	1468-001	1W5D1	GP2L-001	MW.5-21	1FM-21	Osc. Anode Bypass
38	51	500	MC60G-510	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	Osc. Grid Cap.
39	85	300	PA4328-6						Fixed Padder
40	10	300	CC31H-100K	1468-00001	5W5Q1	GP1K-10	MO.5-41	MS-41	Osc. Feedback
41	5	300	PA4328-5	1468-00005	5W5V5	NP0K-5	MO.5-55	MS-55	RF Coupling
42	46	300	PA4328-2						Fixed Padder
43	51	300	CC31H-510K	1469-00005	5R5Q5	NP0M-50	MOS.5-45	MS-45	Fixed Trimmer
44	20000	300	HK35G-203	484-02	GT4S2		ST-4-02	TM-12	Decoupling
45	1000	500	PA4325-2	1468-001	1W5D1	GP2L-001	MW.5-21	1FM-21	RF Screen Bypass
46	10000	300	PA4325-1	484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	RF Cathode Bypass
47	51	300	PA4328-9	1469-00005	5R5Q5	NP0M-50	MOS.5-45	MS-45	Fixed Padder
48	51	500	MC60G-510	1468-00005	5W5Q5	GF1K-50	MO.5-45	1FM-45	RF Coupling
49	1000	500	PA4325-2	1468-001	1W5D1	GP2L-001	MW.5-21	1FM-21	Filament Bypass

† Parallel sections to obtain desired capacity.

Note 1. Items 24 and 73 are combined into one unit obtainable under MFGRS Part # PA4330-7
Note 2. Items 27 and 71 are combined into one unit obtainable under MFGRS Part # PA4330-6
Note 3. Items 30 and 68 are combined into one unit obtainable under MFGRS Part # PA4330-8
Note 4. Items 31A, 31B and 65 are combined into one unit obtainable under MFGRS Part # PA4329-3
Note 5. Items 33 and 62 are combined into one unit obtainable under MFGRS Part # PA4330-5
Note 6. Items 34 and 63 are combined into one unit obtainable under MFGRS Part # PA4330-6
Note 7. Items 35 and 61 are combined into one unit obtainable under MFGRS Part # PA4330-4
Note 8. Items 29 and 69 are combined into one unit obtainable under MFGRS Part # PA4330-6

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SPARTON PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
85	6200Ω	3.5Ω	345Ω	.4Ω	AB44056-2	A-3877	RO-302	A-2931	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: SPARTON PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.				
86	FM	3.5Ω	PC63000-20	ST-120# ‡ MOD. P10-S	10A31 #	# Drill new mounting holes. † Replace output XFMR to match 6-8Ω VC.
	CONE DIA.	V. C. DIA.				
87	6 1/4"	1"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: SPARTON PART No.	REPLACEMENT DATA: MEISSNER PART No.	
88	AM Loop Ant.		.2Ω	AC-67008-4		
89	Loop Loading Coil		2Ω	AA6686-2		
90	FM Dipole Ant.		0Ω	AB-41923		
91A	FM Ant.Coil Pri.		0Ω	AA6786-1		
B	FM Ant.Coil Sec.		0Ω	AA6767-1		
92	AM RF Coil	62Ω	4.5Ω	AA6756-7		
93	FM RF Coil		0Ω	AA6767-5		
94	AM Osc.Coil	.8Ω	7Ω	AA6759-4	14-1060	
95	FM Osc.Coil		0Ω	AA6767-4		
96A	AM 1st IF	11Ω	**9Ω	AA6768-3		** Includes FM IF Secondary
B	FM 1st IF	.8Ω				
97A	AM 2nd IF	††9.5Ω	8Ω	AA6768-4		†† Includes FM IF Primary
B	FM 2nd IF		.8Ω			
98	FM 3rd IF		.5Ω	AA6720-5		
99	Ratio Det.	1.5Ω	.8Ω	AA6684-1		
100	FM RF Choke		0Ω	AA6769-2		
101	RF Choke		0Ω	AA6798-1		Wound on 15MMF capacitor

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: SPARTON PART No.		NOTES
102	Bayonet	6-8V	0.25A	Blue	PA4100-3		Type #44
103	Bayonet	6-8V	0.25A	Blue	PA4100-3		Type #44

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: SPARTON PART No.	REPLACEMENT DATA: ASTATIC PART No.	REMARKS
104		LT3-M	

MISCELLANEOUS

ITEM No.	PART NAME	SPARTON PART No.	NOTES
105	Switch	PB42005	Band
106	3 Gang Var. Cap.	PC-65001	(17-422MMF) Each Section
A5	Trimmer	PA4352-3	BC Osc. Adj.
A6	Trimmer	PA4352-1	BC RF Adj.
A7	Trimmer	PA4352-1	BC Ant. Adj.
A8	Padder	PA4352-8	BC Osc. Adj.
A16	Trimmer	PA4366	FM Osc. Adj.
A17	Trimmer	PA4366	FM RF Adj.
A18	Trimmer	PA4366	FM Ant. Adj.
	Dial Crystal	PB41919	
	Dial Pointer	AA6742-1	

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	SPARTON PART No.	IRC PART No.	CLAROSTAT PART No.	
50A	500KΩ	½	PA4407-2	D13-133	M-60-Z	Volume control
B	Shaft		Not Req.	A	Not Req.	Attach to 50A Per Instructions
51A	500KΩ	½	PA4400-7	D13-133*	AM-60-Z*	Tone control
B	Shaft		Not Req.	E	KSS-3	Attach to 51A Per Instructions
C	Switch		Not Req.	41	SW-A	" " " " "

* Use original sleeve on control shaft.

RESISTORS

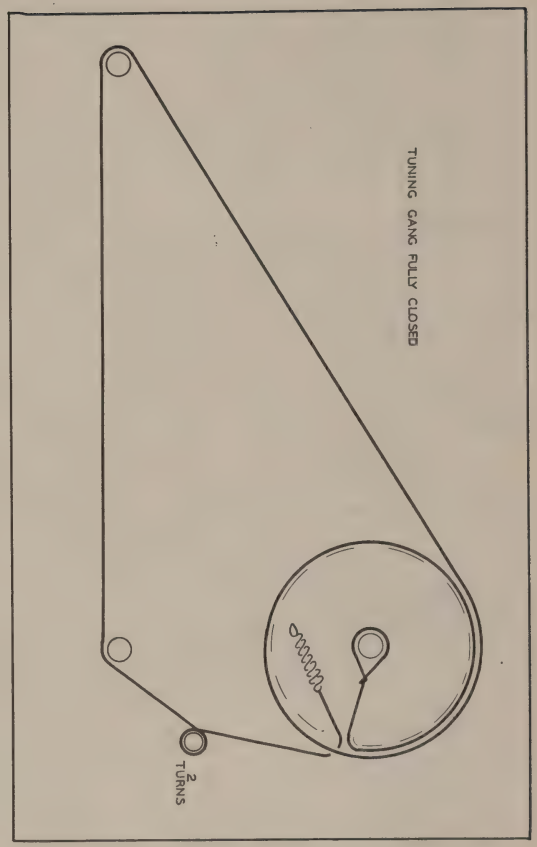
ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	SPARTON PART No.	IRC PART No.		
52	2200Ω	½	BR12S-222	BTS-2200	Red-Red-Red	Ant. Loading
53	1 Meg.	½	BR12S-105	BTS-1 Meg.	Br.-Blk.-Grn.	RF Grid
54	68Ω	½	BR12S-680		Blue-Gray-Blk.	RF Cathode
55	33KΩ	½	BR12S-333	BTS-33K	Or.-Or.-Or.	RF Screen
56	47Ω	½	BR12S-470		Yl.-Vi.-Blk.	Parasitic Supp.
57	1 Meg.	½	BR12S-105	BTS-1 Meg.	Br.-Blk.-Grn.	Conv. Grid
58	22KΩ	2	DR12S-223	BT-2-22K	Red-Red-Or.	Conv. Screen
59	1000Ω	½	BR12S-102	BTS-1000	Br.-Blk.-Red	Conv. Plate Decoup.
60	22KΩ	½	BR12S-223	BTS-22K	Red-Red-Or.	Osc. Grid
61	100KΩ	½	Note 7	BTS-100K		AVC Net.
62	82KΩ	½	Note 5	BTS-82K		1st IF Screen
63	270Ω	½	Note 6			1st IF Cathode
64	1000Ω	½	BR12S-102	BTS-1000	Br.-Blk.-Red	1st IF Plate Decoup.
66	56KΩ	½	Note 4	BTS-56K		Diode Filter
66	680KΩ	½		BTS-680K	Blue-Gray-Yl.	AVC Net.
67	1.5 Meg.	½		BTS-1.5 Meg.	Br.-Grn.-Grn.	" "
68	1 Meg.	½	Note 3	BTS-1 Meg.		2nd IF Grid
69	270Ω	½	Note 8			2nd IF Cathode
70	15KΩ	½	BR12S-153	BTS-15K	Br.-Grn.-Or.	3rd IF Grid
71	270Ω	½	Note 2			3rd IF Cathode
72	1000Ω	½	BR12S-102	BTS-1000	Br.-Blk.-Red	3rd IF Plate Decoup.
73	39KΩ	½	Note 1	BTS-39K		De-emphassis
74	220Ω	½	BR12S-201		Red-Red-Br.	Balancing Res.
75	470Ω	½	BR12S-471	BTS-470	Yl.-Vi.-Br.	" "
76	15KΩ	½	BR12S-153	BTS-15K	Br.-Grn.-Or.	Ratio Det. Diode Load
77	15KΩ	½	BR12S-153	BTS-15K	Br.-Grn.-Or.	" " " "
78	1 Meg.	½	BR12S-105	BTS-1 Meg.	Br.-Blk.-Grn.	Phono Tone Comp.
79	10 Meg.	½	BR12S-106	BTS-10 Meg.	Br.-Blk.-Blue	AF Grid
80	220KΩ	½	BR12S-224	BTS-220K	Red-Red-Yl.	AF Plate Load
81	56KΩ	½	BR12S-563	BTS-56K	Grn.-Blue-Or.	AF Plate Decoup.
82	470Ω	2	DR12S-471	BT-2-470	Yl.-Vi.-Br.	Output Cathode
83	600Ω	10	PA4230-4	A2-600		Filter

Note 1. Items No. 73 and 24 are combined into one unit obtainable under MFGRS Part # PA4330-7
Note 2. Items No. 71 and 27 are combined into one unit obtainable under MFGRS Part # PA4330-6
Note 3. Items No. 68 and 30 are combined into one unit obtainable under MFGRS Part # PA4330-8
Note 4. Items No. 65 and 31A and B are combined into one unit obtainable under MFGRS Part# PA4329-3
Note 5. Items No. 62 and 33 are combined into one unit obtainable under MFGRS Part # PA4330-5
Note 6. Items No. 63 and 34 are combined into one unit obtainable under MFGRS Part # PA4330-6
Note 7. Items No. 61 and 35 are combined into one unit obtainable under MFGRS Part # PA4330-4
Note 8. Items No. 69 and 29 are combined into one unit obtainable under MFGRS Part # PA4330-6

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	SPARTON PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
84	117VAC @ .38A	5VAVCT @ .6A	6.3VAC @ 2.0A	2.5VAC @ 2.0A	PA4401C-1	P-8011§	PH-70L§	P-8201§

§ Drill new mounting holes and add series resistor to reduce plate voltage.



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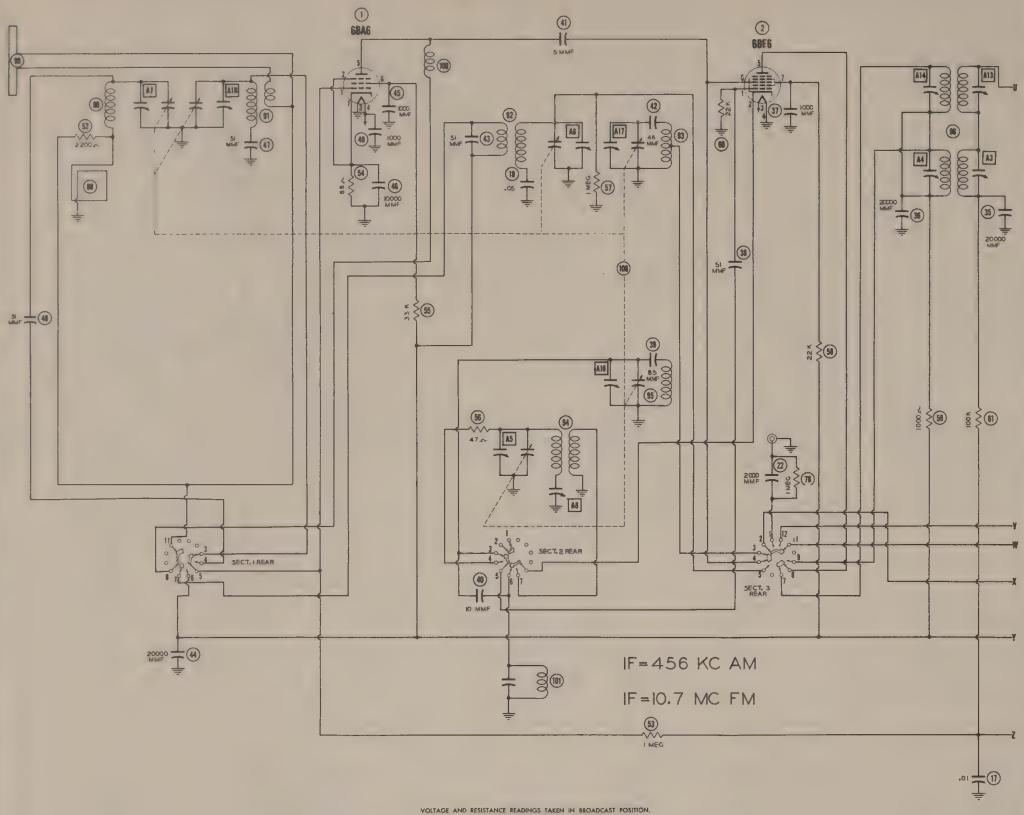

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	-.1VDC	+1VDC	6.4VAC	0V	240VDC	100VDC	-.1VDC	
2A	6BE6	5-42VDC	0V	6.4VAC	0V	230VDC	54VDC	0V	
2B	6BE6	5-3.6VDC	0V	6.4VAC	0V	235VDC	31VDC	-.3VDC	
3	7A7	6.4VAC	250VDC	+1VDC	4VDC	0V	-.1VDC	2VDC	0V
4	7AQ7	6.4VAC	240VDC	245VDC	.7VDC	0V	-.2VDC	.7VDC	0V
5	7AQ7	6.4VAC	240VDC	246VDC	1.3VDC	0V	0V	0V	0V
6	6AL5	2.5VDC	-2.8VDC	0V	6.4VAC	45VDC	0V	1.5VDC	
7	7B6	0V	90VDC	95VDC	-1-	0V	-2V.C	0V	6.4VAC
8	7B5	0V	255VDC	240VDC	0V	0V	0V	16VDC	6.4VAC
9	5Y3GT	0V	27.0VDC	0V	250VAC	0V	250VAC	0V	270VDC

TAKEN WITH VACUUM TUBE VOLTMETER

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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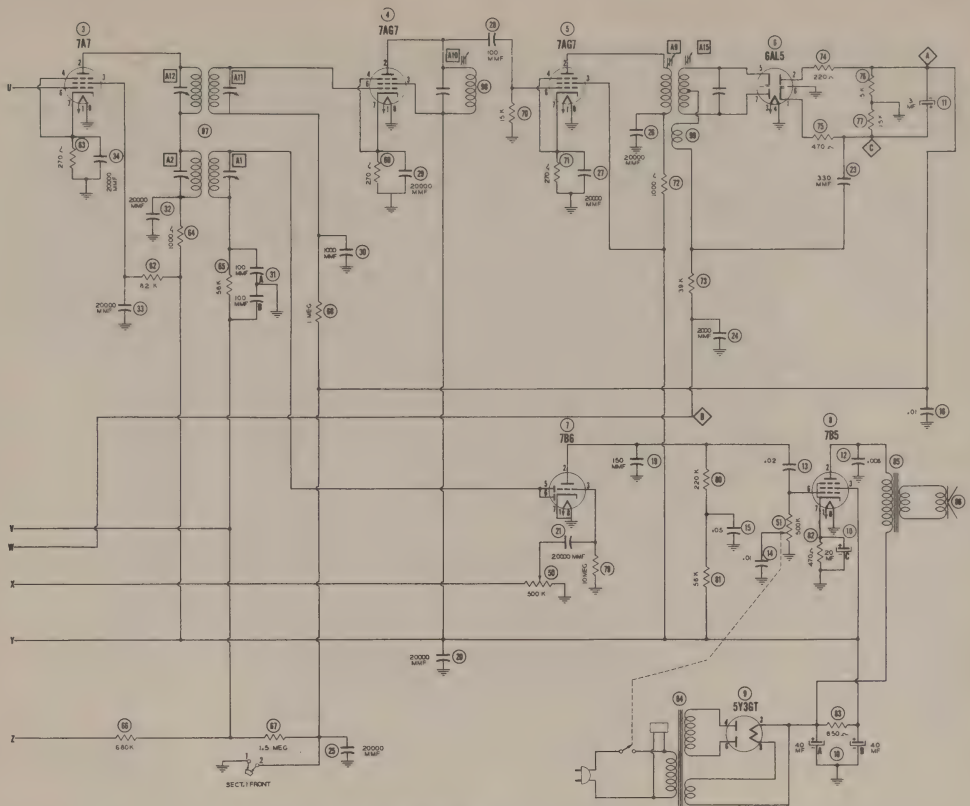

RESISTANCE READINGS

Socket	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	5Y3GT	2K 370Ω	105	1K	0Ω	110Ω	110Ω	0Ω	
2	6BE6	270K	1K	1K	0Ω	110K	130K	12K	
3	6BE6	260K	0Ω	1K	0Ω	110Ω	130K	0Ω	
4	7A7	12	110K	190K	270K	0Ω	1.25K	270K	0K
5	7AG7	2K	110K	110K	270K	0K	370Ω	270K	0K
6	7AG7	12	110K	110K	270K	0Ω	16K	270K	0Ω
7	6AL5	100K	105	0Ω	1K	0K	0K	0K	
	7B6	12	3.0K	470Ω	Inf.	Inf.	60K	0K	12
	7B5	0Ω	110K	110K	Inf.	Inf.	110K	470Ω	1K
8	5Y3GT	2K	370Ω	Inf.	90K	Inf.	70Ω	Inf.	370

* VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.
RESISTANCE READINGS IN THE B- CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial.

Use insulated alignment screwdriver for adjusting.

Dummy antenna consists of a 200MMFD cap. in series with a 20millihenry choke, the choke being shunted by a 400MMFD cap in series with a 100Ω carbon resistor.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.02MFD	High side to pin 7 (Grid) of 6BE6. Low side to chassis.	456KC	AM (center position)	Tuning cap fully open	Across voice coil	A1, A2 A3, A4	Adjust for maximum output.
2.	Dummy Ant.	High side to green antenna lead. Low side to chassis.	1500KC	"	1500KC	"	A5	" " " "
3.	Dummy Ant.	"	"	"	Tune for maximum output.	"	A6, A7	" " " "
4.	Dummy Ant.	"	600KC	"	"	"	A8	Rock tuning cap and adjust for maximum output. Repeat steps 2, 3, & 4 until no further improvement can be made.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep.

Connect the synchronized sweep voltage from the signal generator to the horizontal input of scope. This voltage may be taken from the powerline if signal generator does not have a sync. voltage output. There may be some phase shift encountered between signal generator and scope horizontal sweep. If provision is made for this in the scope, rotate phase control until a single trace pattern is obtained. If no provision in made for this, the same thing may be accomplished by inserting a cap. of suitable value (.01 to .1MFD) in series with the horizontal sync. input.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
5.	.01MFD	High side to pin 6 (Grid) of 7A7 1st IF tube (3). Low side to chassis.	10.7MC (freq. mod.)	FM (counterclockwise)	Tuning cap fully open	Vertical input to point (A) Ground to chassis.	A9,A10 A11, A12	Disconnect 3MFD cap (11) from point A. Adjust A9 thru A12 for maximum amplitude and symmetry of pattern per Fig. 1.
6.	.01MFD	High side to pin 7 (Grid) of 6BE6. Low side to chassis.	"	"	"	"	A13, A14	Adjust for maximum amplitude and symmetry of pattern per Fig. 1. Reconnect cap (11) to point A.
7.	.01MFD	"	"	"	"	Vertical input to point (B) Ground to chassis.	A15	Adjust for maximum straightness of diagonal line with center of diagonal line on scope horizontal sweep line per Fig.2. Continue with FM-RF alignment in step 10.

FIG. 1

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND OUTPUT METER

Use low range output meter and attenuate output of signal generator to maintain approximately maximum reading on meter.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
5.	.05MFD	High side to pin 6 (Grid) of 7AG7 FM driver (5). Low side to chassis.	10.7MC (400∿ AM modulation)	FM (counterclockwise)	Tuning cap fully open	Across voice coil	A9, A15	Adjust for maximum output.
6.	.05MFD	High side to pin 6 (Grid) of 7AG7 2nd IF tube (4). Low side to chassis.	"	"	"	"	A10	" " " "
7.	.05MFD	High side to pin 6 (Grid) of 7A7 1st IF tube (3). Low side to chassis.	"	"	"	"	A11, A12	" " " "
8.	.05MFD	High side to pin 7 (Grid) of 6BE6. Low side to chassis.	"	"	"	"	A13, A14	Shunt 15KΩ carbon resistor from pin 6 (Grid) of 7A7 to chassis. Adjust A13 and A14 for maximum output. Remove 15KΩ resistor.
9.	.05MFD	"	"	"	"	"	A15	Adjust for minimum output. Continue with FM-RF Alignment in step 10.

FIG. 2

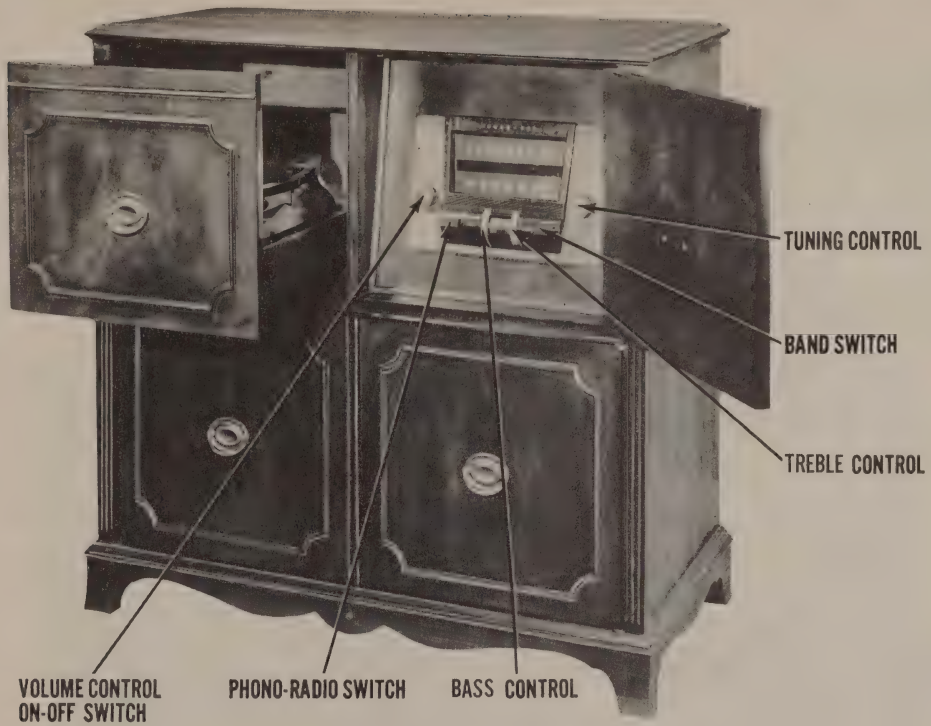
FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
10.	300Ω carbon res.	Each side to FM Antenna terminal.	108MC (Unmod.)	FM	108MC	DC Probe to point (A) Common to point (C)	A16	Adjust for maximum deflection.
11.	300Ω carbon res.	"	"	"	Tune for maximum deflection	"	A17, A18	Rock tuning cap and adjust for maximum deflection. Check calibration at 88MC.

PHOTOFACT* Folder

STROMBERG-CARLSON MODELS 1409M2-M, Y, 1409M-2W, 1409M3A, 1409M3M, 1409PGM, 1409PGW

STROMBERG-CARLSON MODELS 1409M2-M, Y, 1409M-2W, 1409M3A, 1409M3M, 1409PGM, 1409PGW



STROMBERG-CARLSON MODELS 1409M2-M, Y, 1409M-2W, 1409M3A, 1409M3M, 1409PGM, 1409PGW

STROMBERG-CARLSON MODEL 1409PGM

TRADE NAME	Stromberg-Carlson, Models 1409M2-M, 1409M2-Y, 1409M-2W, 1409M3A, 1409M3M, 1409PGM, 1409PGW
MANUFACTURER	Stromberg-Carlson Co., 100 Carlson Rd., Rochester 3, New York.
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Antenna.
TUBES(FOURTEEN)	Types 6BA6 FM RF Amp., 6BA6 AM RF Amp., 12AT7 FM Converter, 6BL6 AM Converter, 6BA6 1st IF Amp., 6BA6 FM 2nd IF Amp., 6BA6 FM 3rd IF Amp., 6AL5 FM Detector, 6AV6 AM DET-AVC-1st AF, 6E5 Tuning Indicator, 12AU7 2nd AF-Phase Inverter, (2) 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC — RATING 1 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	535-1630KC — FREQ. MOD. 87-109MC

DISASSEMBLY INSTRUCTIONS

1. Remove phono motor plug, phono pickup plug, cabinet light plug, and speaker plug.
2. Remove four screws holding speaker. Remove speaker.
3. Remove FM antenna leads from ant. terminal strip at rear of chassis.
4. Remove AM antenna leads from loop antenna.
5. Remove two push-on type control knobs.
6. Remove four hex. head screws from underneath chassis. Remove chassis.
7. Remove control plug from front of chassis.
8. Remove four screws holding control sub-assembly. Remove control sub-assembly.

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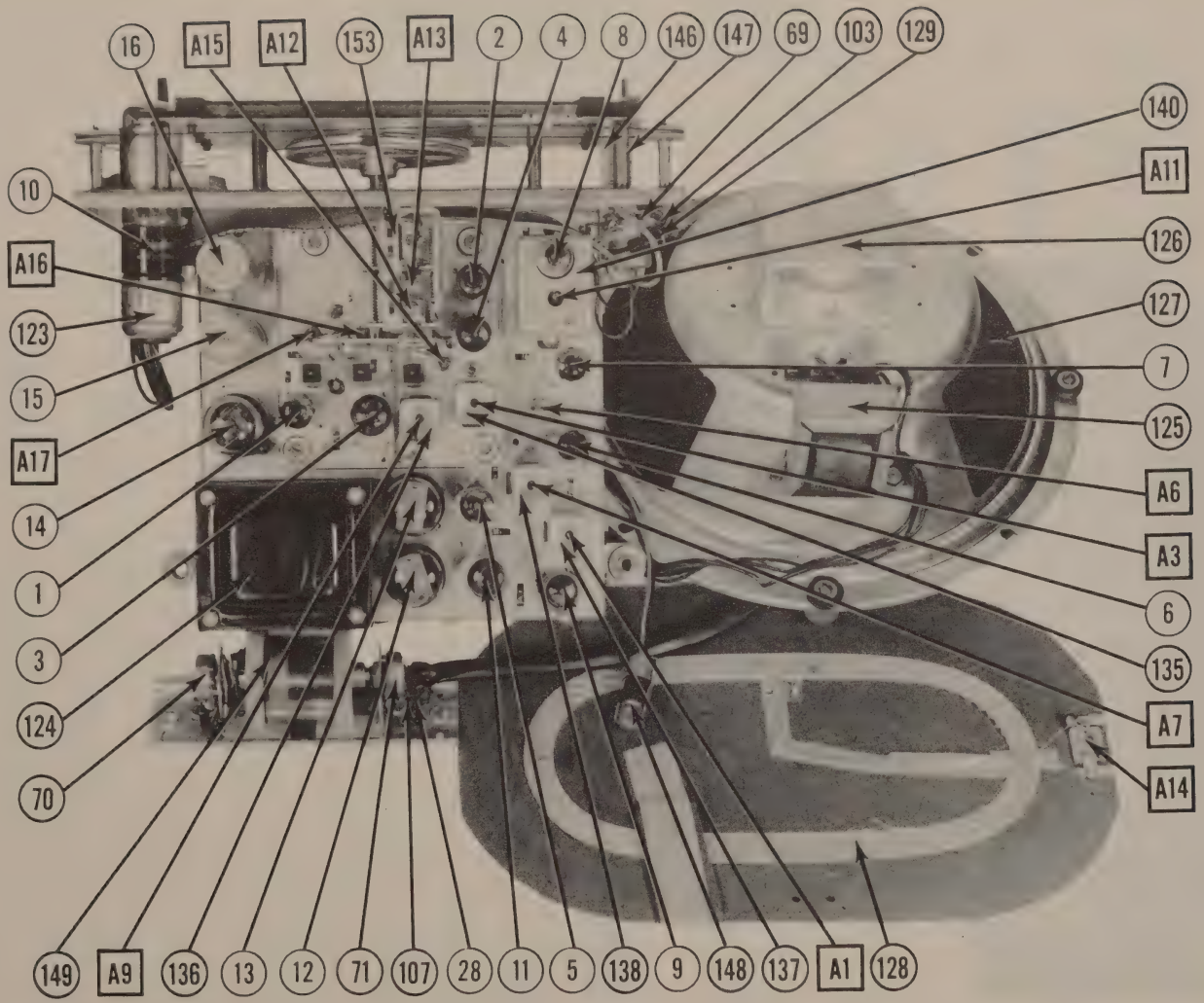
DATE 5/49 4910-20 SET #62 FOLDER 20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149
A9
136
13
12
71
107
28
11
5
138
9
148
137
A1
128

A10
A4
A2
A8
A5
A
B
C

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA STROMBERG-CARLSON PART No.	REPLACEMENT DATA STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
1	FM RF Amp.	6BA6	6BA6	7BK	
2	AM RF Amp.	6BA6	6BA6	7BK	
3	FM Converter	12AT7	12AT7		
4	AM Converter	6BE6	6BE6	7CH	
5	1st IF Amp.	6BA6	6BA6	7BK	
6	FM 2nd IF	6BA6	6BA6	7BK	
7	FM 3rd IF	6BA6	6BA6	7BK	
8	FM Detector	6AL5	6AL5	6BT	
9	AM Det.-AVC 1st AF	6AV6	6AV6	7BT	
10	Tuning Indicator	6E5	6E5	6R	
11	2nd AF Phase Inv.	12AU7	12AU7	9A	
12	Power Output	6V6GT	6V6GT	7AC	
13	Power Output	6V6GT	6V6GT	7AC	
14	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA STROMBERG-CARLSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
15A	20	450	111044	AF44J4A	UP2245C		DY-312	EL-350	▲Filter
15B	20	450							▲Filter
15C	20	25							Cathode Bypass
16A	20	450	111043	AF44J4A	UP2245C		DY-312	EL-350	▲Filter
16B	20	350							▲Decoupling
16C	20	25							Cathode Bypass
17	20	350	111048	PRS450/20	BR2045		M-20-350	UT-203	Decoupling
18	4	50	111047	PRS150/4	BR415		M-4-450	TA-55	Stabilizing Cap.
19	.0022	600	27646	684-002	GT6D2		ST-6-002	TM-22	Output Plate Bypass
20	.01	400	110540	484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Output Screen "
21	.01	400	110540	484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Filament Bypass
22	.004	500	110587	684-004	GT6D4	GP2M-005	ST-6-004	TM-24	Audio Coupling
23	.01	400	110540	484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	" "
24	.01	400	110540	484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	" "
25	.01	400	110540	484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	" "
26	.022	400	110542	484-02	GT4S2		ST-4-02	TM-12	Tone Comp.
27	.002	600	110456	684-002	GT6D2		ST-6-002	TM-22	" "
28	.005	500	110419	684-005	GT6D5	GP2M-005	ST-6-005	TM-25	" "
29	.01	400	110540	484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	" "
30	.01	400	110540	484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Audio Coupling
31	.003	500	110488	684-003	GT6D3	GP2M-003	ST-6-003	TM-23	De-Emphasis
32	.01	400	110540	484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	3rd IF Plate Decoup.
33	.01	400	110540	484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	3rd IF Screen Bypass
34	.01	400	110540	484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	2nd IF Plate Decoup.
35	.01	400	110540	484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	" " Screen Bypass
36	.01	400	110540	484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	1st.IF Plate Decoup.
37	.01	400	110540	484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	" " Screen Bypass
38	.1	400	110546	484-1	GT4P1		ST-4-1	TM-1	AVC Filter
39	.01	400	110540	484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	" "
40	.01	400	110540	484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Screen Decoupling
41	.004	400	110538	484-005	GT4D5	GP2M-005	ST-4-005	TM-25	AVC Filter
42	470	300	110455	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	Tone Comp
43	100	300	110451	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	AF Plate Bypass
44	500	500	110455	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	Phono Coupling
45	100	300	110451	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	IF Coupling
46	100	300	110476	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	3rd.IF Fixed Trimmer
47A	100	300	Note 1	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Diode Filter
47B	100	300	Note 1	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Diode Filter
48	47	300	110402	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	Osc. Grid Cap.
49	5	300		1469-00005	5R5V5	NP0K-5	MO5.5-55	MS-55	Osc. Feedback
50	5000	300	110586	1467-005	1D5D5	GP2M-005	MV.5-25	1FM-25	FM Conv.Plate Decoup.
51	1500	500	110457	1467-0015	1W5D15	GP2L-0015	MV.5-215	1FM-215	" Osc. Feedback
52	5	300	110593	1469-00005	5R5V5	NP0K-5	MO5.5-55	MS-55	1st.IF Fixed Trimmer
53	47	300	110402	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	Osc. Grid Cap.
54	24	300	110592	1469-00002	5R5Q25	GP1K-25	MO5.5-425	MS-425	Osc. Feedback
55	24	300	110403	1469-00002	5R5Q25	GP1K-25	MO5.5-425	MS-425	" "
56	1.5	300	110438						" Coupling

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA STROMBERG-CARLSON PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES	
113	220KΩ	½	149115	BTS-220K	Red-Red-Yl.	Phase Inv. Plate Load
114	2200Ω	½	149103	BTS-2200	Red-Red-Red	Tone Comp.
115	2200Ω	½	149103	BTS-2200	Red-Red-Red	Tone Comp.
116	47KΩ	½	28187	BTS-47OK	Yl.-Vi.-Yl.	Output Grid
117	47KΩ	½	28187	BTS-47OK	Yl.-Vi.-Yl.	" "
118	330Ω	2	149020	BW-2-330	Or.-Or.-Br.	" Cathode
119	4.7Ω	1	149282	BW-1-4.7	Yl.-Vi.-Gold	Series Tone Control
120	100KΩ	½	149113	BTS-100K	Br.-Blk.-Yl.	Decoupling
121	1000Ω	½	149101	BTS-1000	Br.-Blk.-Red	Filter
122	1000Ω	10	149247	AB-1000		"
123	1Meg.	½	149119	BTS-1Meg.	BR.-Blk.-Grn.	Tuning Ind. Plate Load

Note: Items 94, 47A &B Are Combined Into One Unit Obtainable Under Mfgrs. Part #110478.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA STROMBERG-CARLSON PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA CHICAGO PART No.	REPLACEMENT DATA MERIT PART No.
124	117VAC @ 1.0A	660VCT @ .13 ADC	5.1VAC @ 2.0A	6.3VAC @ 4.2A	161416			

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA STROMBERG-CARLSON PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA CHICAGO PART No.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
125	8700Ω CT	6.0Ω	330Ω	.4Ω	161240	A-3823	RO-307	A-3027#	# Drill new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA STROMBERG-CARLSON PART No.	REPLACEMENT DATA JENSEN PART No.	REPLACEMENT DATA QUAM PART No.	INSTALLATION NOTES
126	FIELD PM	V. C. IMP. 6.0Ω	155065	ST-102 MOD-F12-S	12A6	
127	CONE DIA. 11 3/4"	V.C. DIA. 1 1/4"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA STROMBERG-CARLSON PART No.	REPLACEMENT DATA MEISSNER PART No.
128	AM Loop Ant.		1Ω	13928	
129	FM Dipole Ant.		0Ω		
130	FM Ant.		0Ω	114053	
131	AM RF Coil	.8Ω	8Ω	114052	
132	FM RF Coil		0Ω	114054	
133	AM Osc.		6Ω	114051	
134	FM Osc.		0Ω	114054	
135	AM 1st IF	16Ω	15.5Ω	114364	16-6678
136	FM 1st IF	1Ω	1Ω	114363	
137	AM 2nd IF	14Ω	13.5Ω	114337	16-6678
138	FM 2nd IF	1Ω	1Ω	114363	
139	3rd IF		.1Ω	114329	
140	Ratio Det.	1Ω		114365	
141	RF Plate		.5Ω	114633	
142	Osc. Cath.		0Ω	114620	
143	Fil. Choke		0Ω	114621	
144	Fil. Choke		.2Ω	114618	
145	Fil. Choke		.2Ω	114618	

PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA STROMBERG PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
57	15	300	110405						Fixed Trimmer
58	100	300	110451	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	RF Coupling
59	5000	300	110586	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	RF Plate Decoupling
60	5000	300	110586	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	RF Screen Bypass
61	100	300	110451	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	RF Coupling
62	5000	300	110586	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	RF Cathode Bypass
63	220	300	110453	1468-0002	5W5T2	GP2K-200	MO.5-32	1FM-32	RF Coupling
64	100	300	110451	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	" "
65	5000	300	110586	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	FM Conv. Cath. Bypass
66	5000	300	110586	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Filament Bypass
67	5000	300	110586	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	" "
68	20	500	110025		5R5Q2	NP0K-20	MOS.5-42	MS-42	Fixed Trimmer

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA STROMBERG-CARLSON PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
69A	1Meg.	½	145056	D19-137X	T-112	Volume Control Tapped @ 500KΩ
B	Shaft		Not Req.	A	Not Req.	Attach to 69A per Instructions
C	Switch		"	41	SW-A	" " " "
70A	1Meg	½	145057			Treble Control
B	Shaft		Not Req.			Attach to 70A per Instructions
71A	5Meg.	½	145058		M-69-Z	Bass Control
B	Shaft		Not Req.		Not Req.	Attach to 71A per Instructions

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA STROMBERG-CARLSON PART No.	IRC PART No.	IDENTIFICATION CODES	
72	1Meg.	½	149119	BTS-1Meg.	Br.-Blk.-Grn.	FM RF Grid
73	2.2Meg.	½	149121	BTS-2.2Meg.	Red-Red-Grn.	AVC Net.
74	68Ω	½	28144		Blue-Gray-Blk.	FM RF Cathode
75	22KΩ	1	149188	BTA-22K	Red-Red-Or.	FM RF Screen Dropping
76	39KΩ	½	28176	BTS-39K	Or-White-Or.	" " " Bleeder
77	1000Ω	½	149101	BTS-1000	Br.-Blk.-Red	" " Plate Decoup.
78	2200Ω	½	149103	BTS-2200	Red-Red-Red	" Conv. Cathode
79	47KΩ	½	28177	BTS-47K	Yl.-Vi.-Or.	" Conv. Plate Decoup.
80	10K	½	149107	BTS-10K	Br.-Blk.-Or.	" Osc. Grid
81	1000Ω	½	149101	BTS-1000	Br.-Blk.-Red	" " Plate
82	68Ω	½	28144	BW-½-68	Blue-Gray-Blk.	AM RF Cathode
83	1Meg.	½	149119	BTS-1Meg	Br.-Blk.-Grn.	AM RF Grid
84	5600Ω	1	149184	BTA-5600	Grn.Blue-Red	" " Plate Decoup.
85	10KΩ	½	149107	BTS-10K	Br.-Blk.-Or.	AVC Net.
86	22KΩ	½	149109	BTS-22K	Red-Red-Or.	AM Osc. Grid.
87	12KΩ	2	149055	BT-2-12K	BR.-Red-Or.	Screen Dropping
88	47KΩ	½	149111	BTS-47K	Yl.-Vi.-Or.	AVC Net
89	68Ω	½	28144		Blue-Gray-Blk	1st IF Cathode
90	39KΩ	1	149189	BTA-39K	Or.-White-Or	1st IF Screen
91	1000Ω	½	149101	BTS-1000	Br.-Blk.-Red	" " Plate Decoup.
92	2.2Meg	½	149121	BTS-2.2Meg	Red-Red-Grn.	AVC Net.
93	470KΩ	½	28187	BTS-470K	Yl.-Vi.-Yl.	Diode Load
94	47KΩ	½	Note 1	BTS-47K		" Filter
95	68Ω	½	28144		Blue-Gray-Blk.	2nd IF Cathode
96	39KΩ	1	149189	BTA-39K	Or.-White-Or.	" " Screen
97	1000Ω	½	149101	BTS-1000	Br.-Blk.-Red	" " Plate Decoup.
98	10KΩ	½	28170	BTS-10K	Br.-Blk.-Or.	3rd " Grid
99	68Ω	½	28144		Blue-Gray-Blk.	" " Cathode
100	39KΩ	1	149189	BTA-39K	Or.-White-Or.	" " Screen
101	1000Ω	½	149101	BTS-1000	Br.-Blk.-Red	" " Plate Decoup.
102	2.2Meg.	½	149121	BTS-2.2Meg.	Red-Red-Grn.	AVC Net.
103	68KΩ	½	149112	BTS-68K	Blue-Gray-Or.	Tone Comp.
104	4.7Meg.	½	149123	BTS-4.7Meg.	Yl.-Vi.-Grn.	1st AF Grid
105	390KΩ	½	28186	BTS-390K	Or.-White-Yl.	" " Plate Load
106	150KΩ	½	27640	BTS-150K	Br.-Grn.-Yl.	Tone Comp.
107	270KΩ	½	28184	BTS-270K	Red-Vi.-Yl.	" "
108	150KΩ	½	27640	BTS-150K	Br.-Grn.-Yl	" "
109	4.7Meg.	½	149123	BTS-4.7Meg.	Yl.-Vi.-Grn.	2nd AF Grid
110	8200Ω	½	28169	BTS-8200	Gray-Red-Red	" " Cathode
111	220KΩ	½	149115	BTS-220K	Red-Red-Yl.	" " Plate Load
112	56KΩ	½	28178	BTS-56K	Grn.-Blue-Or.	Phase Inv. Grid

DATE 5/49 4910-20 SET #82 FOLDER 20

PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHTS

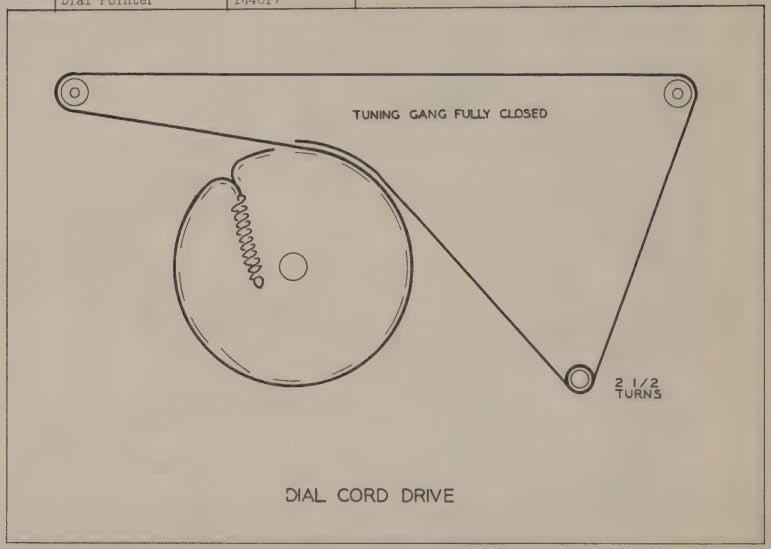
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA STROMBERG-CARLSON PART No.		NOTES
146	Bayonet	6-8V	0.25A	Blue	29956		Type #44
147	Bayonet	6-8V	0.25A	Blue	29956		Type #44
148	Bayonet	6-8V	0.25A	Blue	29956		Type #44
149	Screw	6-8V	0.25A	Blue			Type #46

PHONO CARTRIDGE

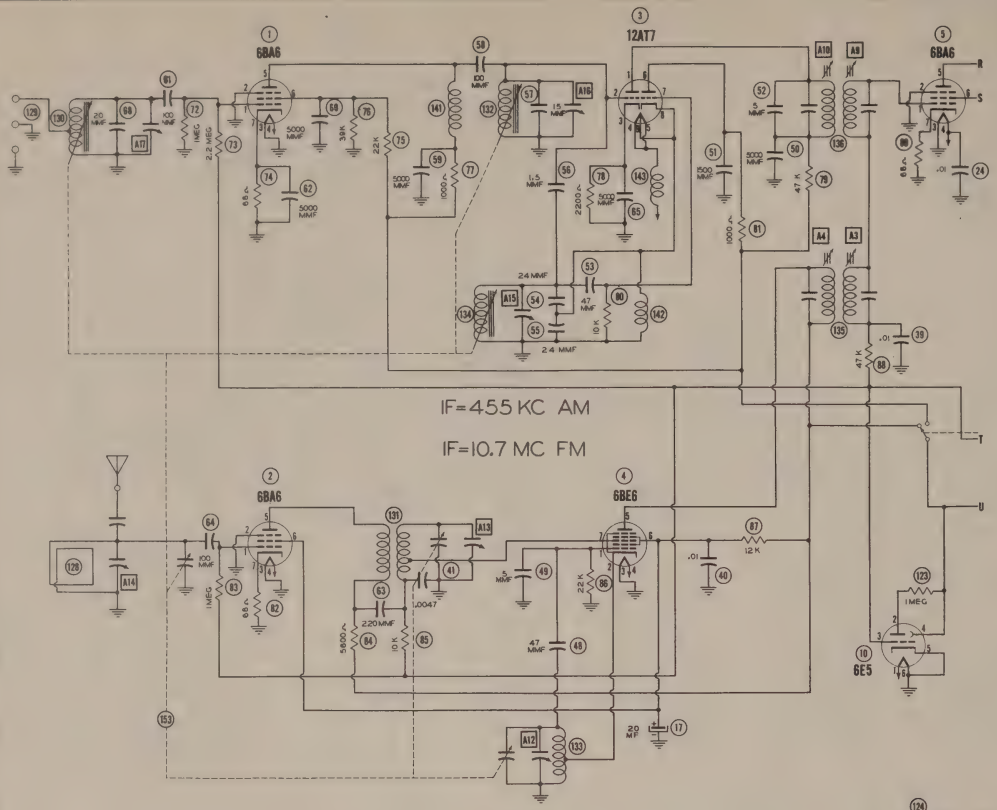
ITEM No.	REPLACEMENT DATA STROMBERG PART No.	REPLACEMENT DATA ASTATIC PART No.	REMARKS
150		LT-1M	

MISCELLANEOUS

ITEM No.	PART NAME	STROMBERG-CARLSON PART No.	NOTES
151	Switch	158032	Radio-Phono
152	Switch	158031	AF-FX
153	3 Gang Var. Cap.	110029	(24-482M*F, 21-290M*F, 22-135M*F)
	Dial Glass	122031	
	Knob	134059	
	Dial Pointer	144017	



STROMBERG-CARLSON MODELS
1409M2-M, Y, 1409M-2W, 1409M3A,
1409M3M, 1409PGM, 1409PGW



VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.
RADIO-PHONO SWITCH IN RADIO POSITION
VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6BA6	-.1VDC	0V	0V	6.6VAC	245VDC	110VDC	.4VDC		
2	6BA6	-.4VDC	0V	0V	6.6VAC	280VDC	120VDC	.7VDC		
3	12AT7	170VDC	0V	4.0VDC	6.6VAC	6.6VAC	245VDC	3-4.VDC	0V	0V
4	6BE6	3-12VDC	0V	0V	6.6VAC	250VDC	120VDC	-.2VDC		
5	6BA6	-.7VDC	0V	0V	6.6VAC	250VDC	120VDC	.9VDC		
6	6BA6	0V	0V	0V	6.6VAC	245VDC	100VDC	1.1VDC		
7	6BA6	0V	0V	6.6VAC	0V	250VDC	100VDC	1VDC		
8	6AL5	See note	0V	6.6VAC	0V	0V	-1VDC			
9	6AV6	-.6VDC	0V	0V	6.6VAC	-.4VDC	0V	75VDC		
10	6E5									
11	12AT7	80VDC	0V	5.6VDC	6.6VAC	6.6VAC	85VDC	0V	5.8VDC	0V
12	6V6T	0V	6.6VAC	330VDC	335VDC	0V	0V	0V	21VDC	
13	6V6T	0V	6.6VAC	330VDC	335VDC	0V	340VDC	0V	21VDC	
14	6V6T	0V	340VDC	120VDC	330VAC	6.6VAC	330VAC	6.6VAC	340VDC	

§TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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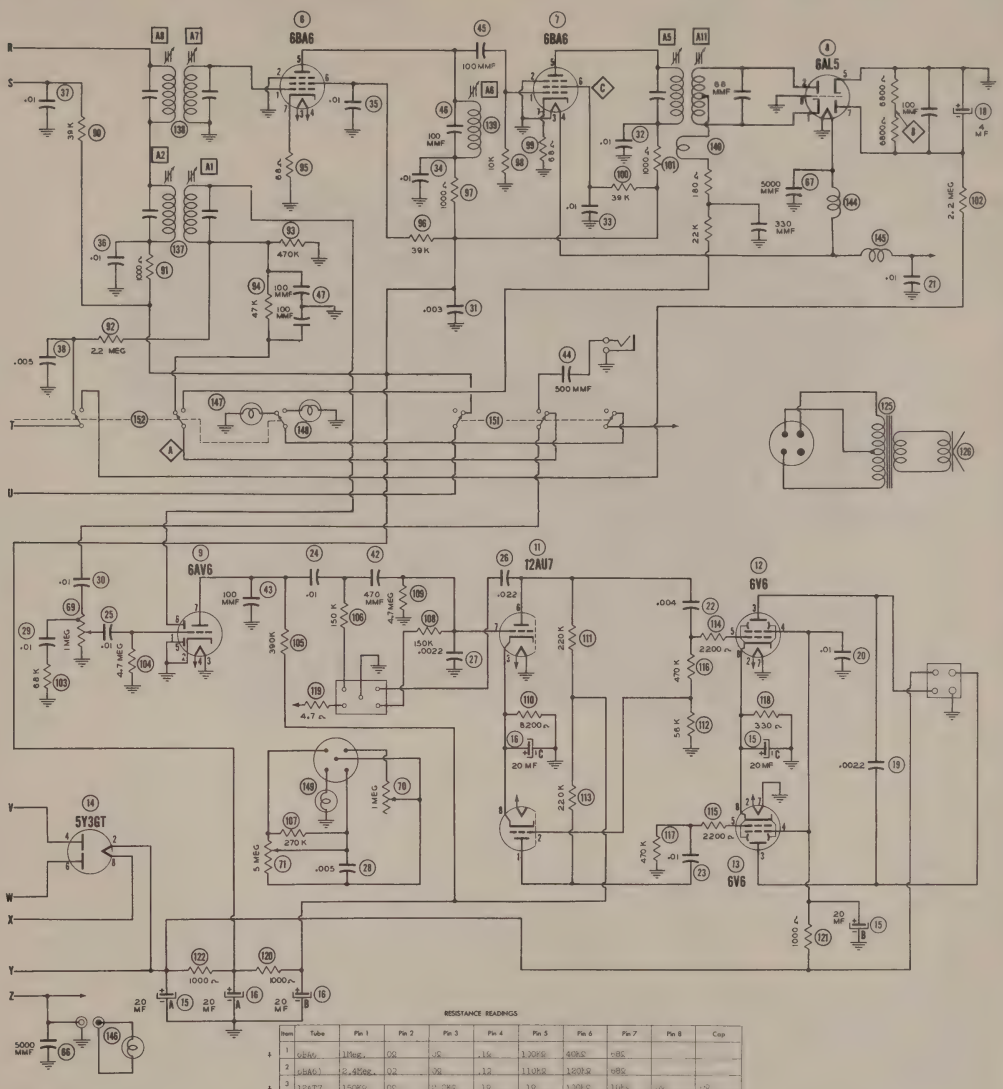

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
+	1 6BA6	1Meg.	0Ω	.5Ω	.1Ω	130KΩ	40KΩ	68Ω		
	2 6BA6	2.45Meg.	0Ω	0Ω	.1Ω	110KΩ	180Ω	68Ω		
+	3 12AT7	150KΩ	0Ω	0.2KΩ	.1Ω	.1Ω	120Ω	10Ω	∞	∞
	4 6BE6	22KΩ	1Ω	0Ω	.1Ω	100Ω	130Ω	1.4Meg.		
	5 6BA6	1.5Meg.	0Ω	0Ω	.1Ω	100Ω	140Ω	68Ω		
+	6 6AV6	1Ω	0Ω	0Ω	.1Ω	100Ω	140Ω	68Ω		
+	7 6BE6	10KΩ	0Ω	.1Ω	0Ω	100Ω	140Ω	68Ω		
+	8 6AL5	Inf.	Inf.	0Ω	.1Ω	0Ω	0Ω	18KΩ		
	9 6AV6	4.7Meg.	0Ω	0Ω	.1Ω	400Ω	0Ω	56KΩ		
	10									
	11 12AU7	440KΩ	56KΩ	8.2KΩ	1Ω	.1Ω	420Ω	440Ω	8.2KΩ	∞
	12 6V6	0Ω	.1Ω	100Ω	100Ω	56Ω	100Ω	0Ω	56Ω	
	13 6V6	0Ω	.1Ω	100Ω	100Ω	470Ω	95Ω	0Ω	56Ω	
	14 5Y3GT	Inf.	100KΩ	100KΩ	7MΩ	1Ω	7Ω	1Ω	100Ω	

* VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

Note: Reading of -.3VDC measured at audio output terminal of FM detector transformer. Other readings taken from accessible terminals of case transformer.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer turn tuning cap fully closed and set pointer to marker at top left edge of dial.

If alignment is necessary on either AM or FM IF circuits, both alignments should be completed.

Use an insulated alignment screwdriver for adjusting. Do not exert excessive pressure when adjusting IF slugs.

AM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Use only enough signal to obtain a satisfactory meter reading on 3VDC scale.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (Grid) of 6BE6. Low side to chassis.	455KC	BC	Tuning cap fully closed	DC Probe to point A. Common to chassis.	A1, A2 A3, A4	Adjust for maximum deflection.

AM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use freq. mod. signal with 60∿ modulation and 15KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
1.	.01MFD	"	455KC (freq.mod)	BC	Tuning cap fully closed	Vertical input to point A. Ground to chassis.	A1, A2 A3, A4	Adjust for maximum amplitude, symmetry and coincidence of pattern per Fig. 1. Continue with FM IF Alignment in step 2

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Use 3 volt scale on VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
2.	.01MFD	High side to pin 2 (Grid) of 12AT7. Low side to chassis.	10.7MC (400∿ Amp. mod.)	FM	Tuning slugs fully in.	DC Probe to point A. Common to chassis.	A5, A6 A7, A8 A9, A10	Detune A11 several turns. Adjust A5 thru A10 for maximum deflection.
3.	.01MFD	"	"	"	"	DC Probe to point A. Common to point B.	A11	Adjust for zero deflection. Continue with AM-RF Alignment in step 4.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use freq. mod. signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
2.	.01MFD	High side to pin 2 (Grid) of 12AT7. Low side to chassis.	10.7MC (freq.mod)	FM	Tuning slugs fully in	Vertical input in series with .01MFD cap to point C. Ground to chassis.	A6, A7 A8, A9 A10	Adjust for maximum amplitude, symmetry and coincidence of pattern per Fig. 2.
3.	.01MFD	"	"	"	"	Vertical input to point A. Ground to chassis.	A5, A11	Alternately adjust A5 for maximum straightness of crossover lines and A11 for crossover of diagonal lines occurring at scope horizontal sweep line per Fig 3. Continue with AM-RF Alignment in step 4.

AM RF ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Use only enough signal to obtain a satisfactory meter reading on 3VDC scale.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.		Loop	1500KC	BC	1500KC	DC Probe to point A. Common to chassis.	A12	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust A12 for maximum deflection.
5.		Loop	"	"	Tune for maximum deflection	"	A13, A14	Adjust for maximum deflection.

FM RF ALIGNMENT

If FM Osc. Coil is replaced, adjust placement of its ground lead for correct tracking at 88MC.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	270Ω carbon res.	High side to ungrounded FM Ant. terminal. Low side to chassis.	100MC (400∿ Amp. mod.)	FM	100MC	DC Probe to point A. Common to chassis.	A15	Adjust for maximum deflection.
7.	270Ω carbon res.	"	"	"	Tune for maximum deflection.	"	A16, A17	Rock tuning control and adjust A16 and A17 for maximum deflection.

With receiver reinstalled in cabinet, tune in weak station near 1500KC and adjust A14 for maximum volume.

FIG. 1

FIG. 2

FIG. 3

WESTINGHOUSE MODELS
H-203, H-212 (Ch. V-2137)

WESTINGHOUSE MODELS
H-203, H-212 (Ch. V-2137)

WESTINGHOUSE MODEL H-203

TRADE NAME	Westinghouse, Models H-203, H-212 (Ch. V-2137)
MANUFACTURER	Westinghouse Electric Corp., Receiver Div., Sunbury, Pennsylvania
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Ant.
TUBES(EIGHT)	Types 12AT7 FM RF Amp-Mixer, 6BE6 FM Osc.-AM Conv., 6BA6 1st IF Amp., 6BA6 FM 2nd IF Amp., 6AL5 FM Detector, 6AV6 AM DET.-AVC-AF, 6V6GT Power Output, 5Y3GT Rectifier
POWER SUPPLY	105-120 Volts AC RATING .76 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1600KC FREQ. MOD. 88-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM RF Amp.-Mixer	12AT7	12AT7		
2	FM Osc.-AM Conv.	6BE6	6BE6	7CH	
3	1st IF Amp	6BA6	6BA6	7BK	
4	FM 2nd IF Amp.	6BA6	6BA6	7BK	
5	FM Detector	6AL5	6AL5	6BT	
6	AM DET-AVC-AF	6AV6	6AV6	7BT	
7	Power Output	6V6GT	6V6GT	7AC	
8	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: WESTING. PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	20	400	V-6121	AF444J4A	UP22245 C		DY-404	EL-442	Filter
B	20	400							" "
C	10	350							Decoupling
D	25	25							Cathode Bypass
10	4	450	V-4885	PRS150/4	BR445		M-4-450	UT-4	Stabilizing Cap.
11	.005	600	RCP10M6502A	684-005	GT6D5	GP2M-005	ST-6-005	TM-25	Output Plate Bypass
12	.01	400	RCP10W4103A	484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Audio Coupling
13	.01	400	RCP10W4103A	484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	" "
14	.03	400	RCP10W4303A	484-03	GT4S3		ST-6-03	TM-13	AF Plate Decoupling
15	.05	200	RCP10W2503A	484-05	GT2S5		ST-4-05	TM-15	Tone Comp.
16	.01	400	RCP10W4103A	484-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Audio Coupling
17	.002	600	RCP10W6202A	684-002	GT6D2	GP2M-002	ST-6-002	TM-22	De-emphasis
18	.02	200	RCP10W2203A	484-02	GT2S2		ST-4-02	TM-12	AVC Filter
19	.01	200	V-5040-13	484-01	GT2S1	GP2-335-01	ST-4-01	TM-11	Decoupling
20	.01	200	V-5040-13	484-01	GT2S1	GP2-335-01	ST-4-01	TM-11	Filament Bypass
21	680	500	RCM20A681M	1468-00075	1W5T7	GP2K-750	MO.5-37	1FM-37	Tone Comp.
22	150	500	RCM20A151M	1468-00015	5W5T15	GP2K-150	MO.5-315	1FM-315	AF Plate Bypass
23	470	500	RCM20A471M	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	Tone Comp.
24	150	500	RCM20A151J	1468-00015	5W5T15	GP2K-150	MO.5-315	1FM-315	Diode Load Cap Note
25	150	500	RCM20A151J	1468-00015	5W5T15	GP2K-150	MO.5-315	1FM-315	" " " Note
26	5000	300	V-5596	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	2nd IF Plate Decoup.
27	5000	300	V-5596	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	2nd IF Screen Bypass
28	5000	300	V-5596	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	2nd IF Cathode Bypass
29	100	500	RCM20A101M	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Diode Filter
30	100	500	RCM20A101M	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	" "
31	5000	300	V-5596	1468-005	1D5D5	GP2M-005	MW.5-25	1FM-25	1st IF Decoupling
32	5000	300	V-5596	1468-005	1D5D5	GP2M-005	MW.5-25	1FM-25	1st IF Screen Bypass
33	5000	300	V-5596	1468-005	1D5D5	GP2M-005	MW.5-25	1FM-25	1st IF Cathode Bypass
34	5000	300	V-5596	1468-005	1D5D5	GP2M-005	MW.5-25	1FM-25	AVC Filter
35	5000	300	V-5596	1468-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Conv. Decoupling
36	470	300	R5CC21ZY 471M	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	Osc. Anode Bypass
37	27	300	R3CC30CK 270K	1468-000025	5W5Q25	GP1K-25	MO.5-425	MS-425	Osc. Grid Cap.
38	5	300	R2CC30CK 050D	1469-000005	5R5V5	NP0K-5	MO8.5-55	MS-55	Osc. Feedback
39	470	300	R5CC21ZY 471M	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	RF Coupling
40	2	300	R2CC30UK 020D						Fixed Trimmer
41	5000	300	V-5596	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Mixer Plate Decoup.
42	100	300	R3CC30SL 101J	1469-0001	5W5T1	NP0M-100	MO.5-31	1FM-31	Fixed Trimmer
43	2	300	R2CC30CK 020D						Osc. Grid Cap.
44	33	300	R3CC26CK 330M	1468-00004	5W5Q3	NP0L-33	MO.5-43	MS-43	RF Coupling
45	33	300	R3CC26CK 330M	1468-00004	5W5Q3	NP0L-33	MO.5-43	MS-43	" "
46	5000	300	V-5596	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	RF Plate Decoupling
47	470	300	R5CC21ZY 471M	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	RF Bypass
48	5000	300	V-5596	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	RF Grid Filter
49	5000	300	V-5596	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	RF Cathode Bypass
50	100	300	R3CC30SL 101M	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	FM Ant. Coupling
51	5000	300	V-5596	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Filament Bypass

Note. When either item 24 or 25 are replaced, replace both with capacitors of equal value.

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
88A	PM	3.3Ω	V-5571	ST-119 MOD.P10-T	10A31	Used in model H-203.
B	PM		V-6251			Used in model H-212.
	CONE DIA.	V. C. DIA.				
89A	9 3/8"	3/4"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: WESTING-HOUSE PART No.	REPLACEMENT DATA: MEISSNER PART No.	
90	AM Loop Ant.		0Ω	V-5982-2		
91	Loop Loading		2Ω	V-6157		
92	FM Dipole Ant.		0Ω	V-5986-3		
93	FM Ant.Coil		0Ω	V-6139		
94	AM Osc.		9Ω	V-6164		
95	FM Osc.		0Ω	V-6138		
96	AM 1st IF	16Ω	16Ω	V-6130	16-6678	
97	FM 1st IF	.5Ω	.5Ω	V-6142		
98	AM 2nd IF	15Ω	15Ω	V-6130	16-6678	
99	FM 2nd IF	.5Ω	.5Ω	V-6129		
100	Ratio Det.	1Ω	0Ω	V-6128		
101	RF Choke		0Ω	V-4886-10		Wound on resistor
102	RF Choke		0Ω	V-4886-6		Wound on 820Ω resistor
103	RF Choke		1.5Ω	V-4886-4		
104	RF Choke		0Ω	V-4886-7		Wound on 22Ω resistor
105	RF Choke		.5Ω	V-4886-2		
106	Fil. Choke		.5Ω	V-4886-2		
107	Fil. Choke		.5Ω	V-4886-2		
108	Fil. Choke		1Ω	V-4886-1		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: WESTING-HOUSE PART No.		NOTES
109	Bayonet	6-8V	0.15A	Brown	#47		Type #47
110	Bayonet	6-8V	0.15A	Brown	#47		Type #47

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: WESTING. PART No.	REPLACEMENT DATA: ASTATIC PART No.	REMARKS
111	V-7689	LT-3M	

MISCELLANEOUS

ITEM No.	PART NAME	WESTINGHOUSE PART No.	NOTES
112	Switch	V-6140	Band
113	2 Gang Var. Cap.	V-6137	(48-552MMF, 37-212 MMF)
	Dial	V-6123	
	Dial Pointer	V-6125	

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	WESTING. PART No.	IRC PART No.	CLAROSTAT PART No.	
52A	500KΩ	½	V-6122			Volume control tapped @ 50KΩ
B	2 Meg.	½				Tone control and SW. See Note

Note. This is a dual control with concentric shaft.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	WESTING. PART No.	IRC PART No.		
53	82Ω	½	RC10AE820K	BW-½-82	Gray-Red-Blk.	FM RF Cathode
54	15Ω	½	RC10AE150M	BW-½-15	Br.-Grn.-Blk.	Parasitic Suppressor
55	470KΩ	½	RC10AE474M	BTS-470K	Yl.-Vi.-Yl.	FM RF Grid
56	2.2 Meg.	½	RC10AE225M	BTS-2.2 Meg.	Red-Red-Grn.	AVC Network
57	5600Ω	1	RC30AE562K	BTA-5600	Grn.-Blue-Red	FM RF Plate Load
58	470KΩ	½	RC10AE474M	BTS-470K	Yl.-Vi.-Yl.	Mixer Grid Load
59	1000Ω	½	RC10AE102K	BTS-1000	Br.-Blk.-Red	Mixer Plate Decoupling
60	4700Ω	½	RC10AE472K	BTS-4700	Yl.-Vi.-Red	Converter Plate Decoupling
61	12KΩ	2	RC41AE123K	BT-2-12K	Br.-Red-Or.	Osc. Anode Load
62	22KΩ	½	RC10AE223K	BTS-22K	Red-Red-Or.	Osc. Grid
63	1 Meg.	½	RC10AE105M	BTS-1 Meg.	Br.-Blk.-Grn.	AVC Network
64	1 Meg.	½	RC10AE105M	BTS-1 Meg.	Br.-Blk.-Grn.	" "
65	33KΩ	1	RC30AE333K	BTA-33K	Or.-Or.-Or.	IF Screen Dropping
66	3300Ω	1	RC30AE332K	BTA-3300	Or.-Or.-Red	IF Plate Decoupling
67	68Ω	½	RC10AE680K	BW-½-68	Blue-Gray-Blk.	IF Cathode
68	47KΩ	½	RC10AE473M	BTS-47K	Yl.-Vi.-Or.	Diode Filter
69	2.2 Meg.	½	RC10AE225M	BTS-2.2 Meg.	Red-Red-Grn.	Diode Load
70	1500Ω	½	RC10AE152M	BTS-1500	Br.-Grn.-Red	Tone Compensation
71	68Ω	½	RC10AE680K	BW-½-68	Blue-Gray-Blk.	2nd IF Cathode
72	33KΩ	1	RC30AE333K	BTA-33K	Or.-Or.-Or.	2nd IF Screen Dropping
73	3300Ω	1	RC30AE332K	BTA-3300	Or.-Or.-Red	2nd IF Plate Decoupling
74	220Ω	½	RC10AE221M	BW-½-220	Red-Red-Br.	RF Filter
75	15KΩ	½	RC10AE153K	BTS-15K	Br.-Grn.-Or.	Ratio Det. Diode Load
76	47KΩ	½	RC10AE473M	BTS-47K	Yl.-Vi.-Or.	De-emphasis
77	220KΩ	½	RC10AE224M	BTS-220K	Red-Red-Yl.	AVC Network
78	3.3 Meg.	½	RC10AE335M	BTS-3.3 Meg.	Or.-Or.-Grn.	" "
79	10 Meg.	½	RC10AE106M	BTS-10 Meg.	Br.-Blk.-Blue	AF Grid
80	470KΩ	½	RC10AE474M	BTS-470K	Yl.-Vi.-Yl.	AF Plate Load
81	150KΩ	½	RC10AE154M	BTS-150K	Br.-Grn.-Yl.	AF Plate Decoupling
82	470KΩ	½	RC10AE474M	BTS-470K	Yl.-Vi.-Yl.	Output Grid
83	270Ω	1	RC30AE271K	BW-1-270	Red-Vi.-Br.	Output Cathode
84	2200Ω	½	RC10AE222K	BTS-2200	Red-Red-Red	Ant. Loading

TRANSFORMER (POWER)

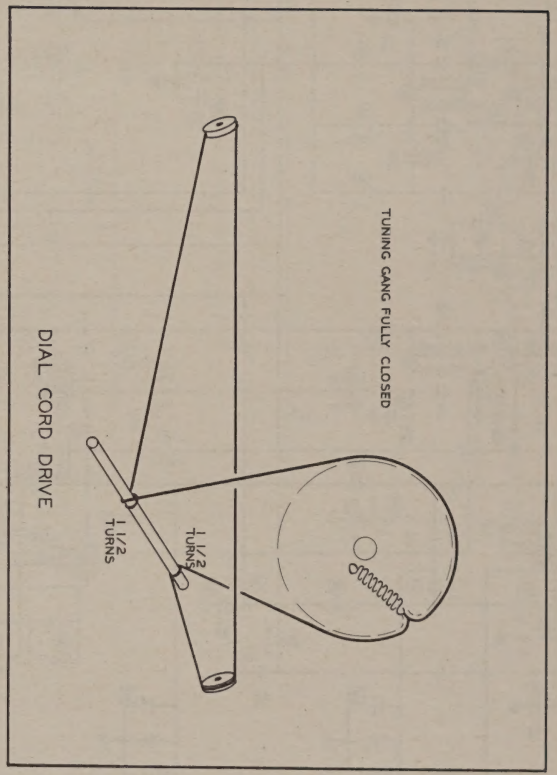
ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	WESTINGHOUSE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
85	117VAC @ .76A	580VAC CT @ .114ADC	5VAC @ 2A	6.6VAC @ 2.5A	V-6131			

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	WESTING-HOUSE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
86	.114A	200Ω	5 Henry	V-6161				

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		WESTING-HOUSE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
87	4750Ω	3.65Ω	400Ω	.42	V-5798	A-3823	RO-302	A-2902	



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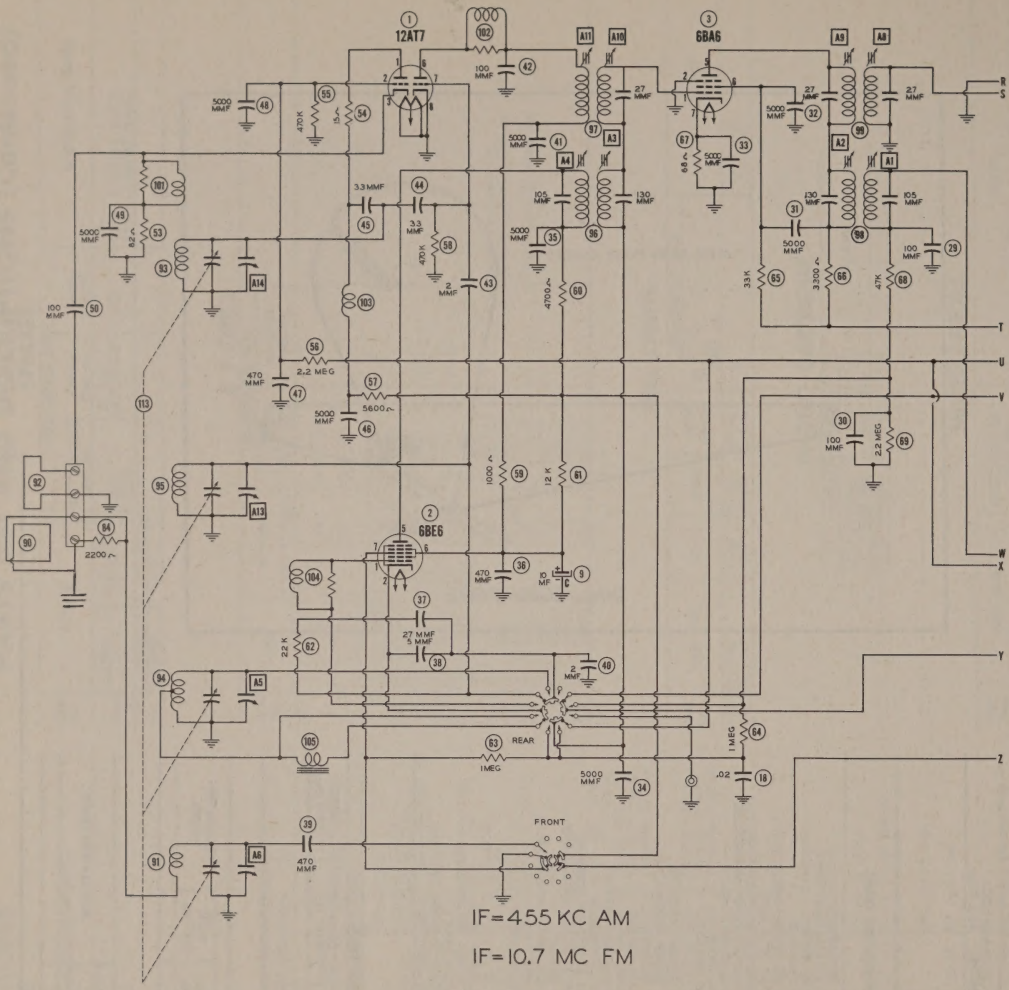

IF=455 KC AM

IF=10.7 MC FM

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
‡	1	12AT7	195VDC	.1VDC	1VDC	0V	0V	123VDC	-2.5VDC	0V	6.3VAC
‡	2‡	6BE6	§-6.6VDC	0V	0V	6.5VAC	250VDC	125VDC	0V		
	2§	6BE6	§-6.8VDC	0V	0V	6.6VAC	250VDC	106VDC	-.1VDC		
	3	6BA6	-.1VDC	0V	0V	6.5VAC	235VDC	107VDC	1.1VDC		
	4	6BA6	0V	0V	0V	6.5VAC	235VDC	110VDC	1.2VDC		
	5	6AL5	-.6VDC	0V	0V	6.5VAC	0V	0V	-.4VDC		
	6	6AV6	-.4VDC	0V	0V	6.5VAC	-.2VDC	.7VDC	90VDC		
	7	6Y6GT	0V	6.3VAC	250VDC	265VDC	0V	220VDC	0V	13.5VDC	
	8	5Y3GT	0V	295VDC	0V	300VAC	0V	300VAC	0V	295VDC	

§TAKEN WITH VACUUM TUBE VOLTMETER.
‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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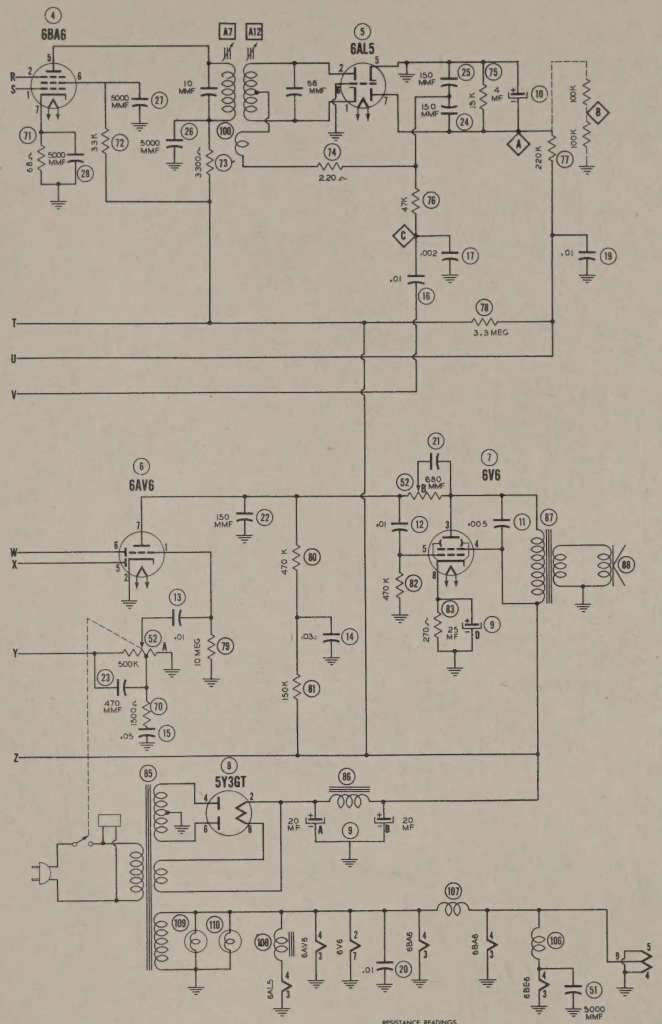

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	12AT7	*6KΩ	400KΩ	83Ω	0Ω	0Ω	*13KΩ	450KΩ	0Ω	.6Ω
2	6BE6	83KΩ	0Ω	0Ω	.5Ω	*5KΩ	12KΩ	2Meg.		
3	6BA6	1.2Meg.	0Ω	0Ω	.5Ω	*4KΩ	*34KΩ	6Ω		
4	6BA6	.5Ω	0Ω	0Ω	.5Ω	*3.5KΩ	*35KΩ	6Ω		
5	6AL5	Inf.	Inf.	0Ω	1Ω	0Ω	0Ω	15KΩ		
6	6AV6	10Meg	0Ω	0Ω	.5Ω	400KΩ	150KΩ	*420KΩ		
7	6V6GT	.5Ω	.6Ω	*600Ω	*200Ω	400KΩ	250KΩ	0Ω	270Ω	
8	5Y3GT	Inf.	120KΩ	Inf.	85Ω	Inf.	80Ω	Inf.	120KΩ	

*Measured From Pin 8 of 5Y3GT

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer, turn tuning capacitor fully closed and set pointer at last reference mark at left hand edge of dial.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 1 6BA6 (V3). Low side to chassis.	455KC	AM (center position)	Tuning cap fully open	Across voice coil	A1, A2	Adjust for maximum output.
2.	.1MFD	High side to pin 1 6BE6 (V2). Low side to chassis.	"	"	"	"	A3, A4	" " " "
3.		Loop	1600KC	"	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		Loop	1400KC	"	Tune for maximum output.	"	A6	Rock tuning cap and adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Before starting step 7, connect two 100KΩ matched resistors (± 5%) connected in series from pin 7 6AL5 (V5) to chassis. (See Schematic). Connect the DC Probe of the VTVM to point B and the common lead to point C.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	1000MMF	High side to pin 1 6BA6 (V2). Low side to chassis.	10.7MC	FM (Ext. counter clockwise)	Tuning cap fully open	DC Probe to point (A) Common to chassis.	A7, A8 A9	Adjust for maximum deflection.
6.	1000MMF	High side to pin 7 12AT7 (V1). Low side to chassis.	"	"	"	"	A10, A11	" " " "
7.	1000MMF	"	"	"	"	DC Probe to point (B) Common lead to point (C)	A12	Adjust for zero reading. A positive or negative reading on either side denotes the correct setting. Remove the two 100KΩ resistors.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
5.	1000MMF	High side to pin 1 6BA6 (V2). Low side to chassis.	10.7MC (450KC Sweep)	FM	Tuning cap fully open	Vertical Amp. to point (A) Low side to chassis.	A7, A8 A9	Disconnect stabilizer capacitor (10). Adjust for maximum amplitude and symmetry as per Fig 1.
6.	1000MMF	High side to pin 7 12AT7 (V1). Low side to chassis.	"	"	"	"	A10, A11	Adjust for maximum amplitude and symmetry as per Fig 1.
7.	1000MMF	"	"	"	"	Vertical Amp. to point (C) Low side to chassis.	A12	Reconnect stabilizer cap. Adjust so crossover point occurrs at center of pattern as per Fig 2. If necessary, slightly retouch A7 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	300Ω carbon res.	High side to terminal 1 of antenna strip. Low side to terminal 2.	105MC	"	105MC	DC Probe to point (A) Low side to chassis.	A13	Adjust for maximum deflection.
9.	300Ω carbon res.	"	"	"	Tune for maximum output.	"	A14	" " " "

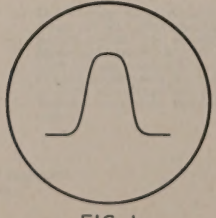

FIG. 1

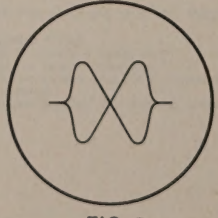

FIG. 2